Section Two

Authors Edition

H. J. WILLING.

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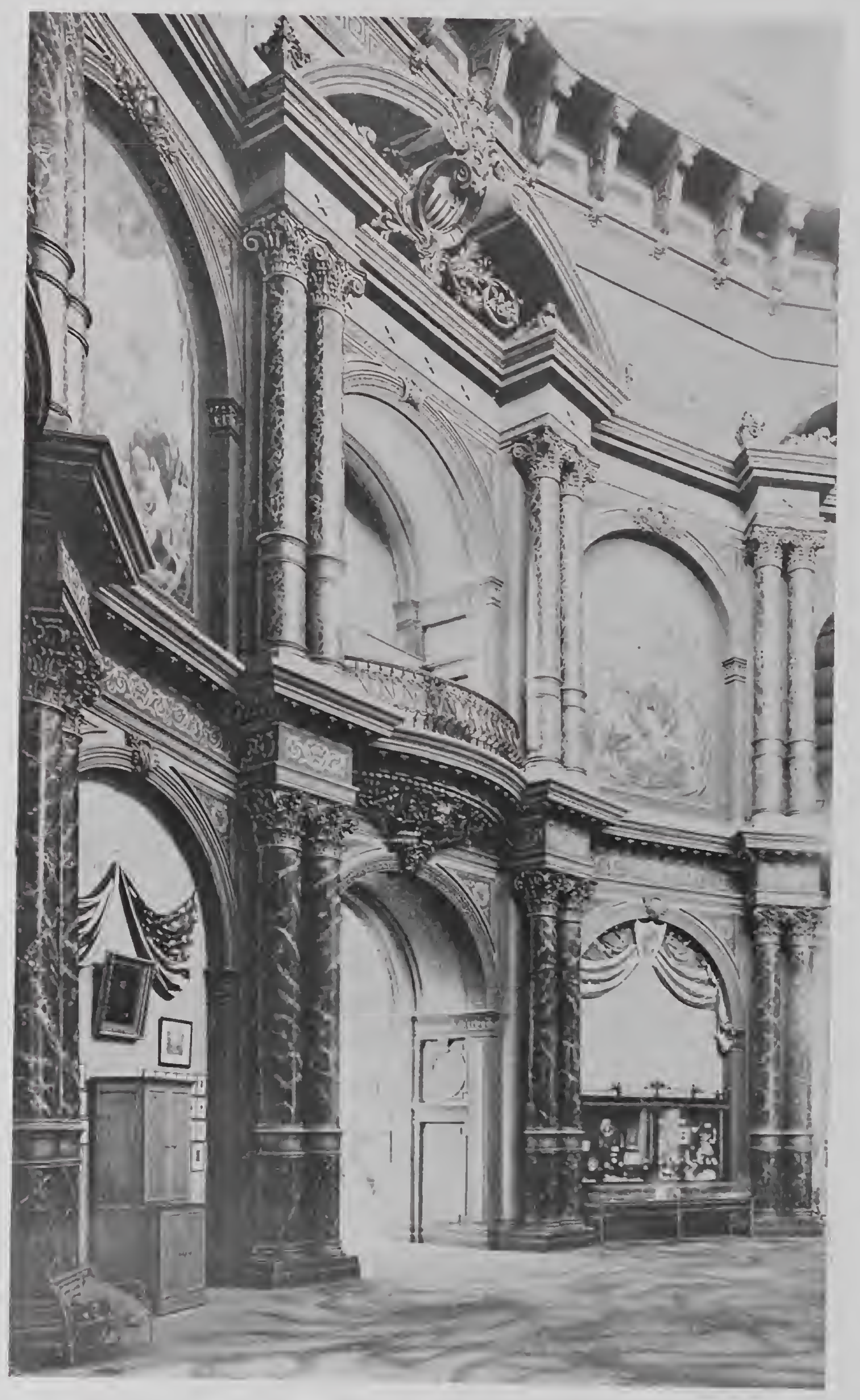
base surrounded with a light balcony, the flag-staff which forms the culminating feature displaying the national colors one hundred and seventy feet above ground.

The principal entrances, one in the middle of the east and west façades, are fashioned as pavilions, with a central arch, and above them an allegorical group of figures, on either side of which are eagles mounted on pedestals. At each of the corners is a square pavilion, with glazed opening and low squat dome. On the remaining frontages are door-ways in three divisions, projecting somewhat boldly but treated as in subordination to the main portals. The curtain-walls are divided into bays, with arched windows, flanked with buttresses, and with a line of transoms on the level of the gallery floors.



UNDER DOME GOVERNMENT BUILDING

While the general scheme is not without merit, as in its relation of parts and its economy of space, the structure bears upon it the true government brand. Even to those unacquainted with the first principles of architecture treated as one of the fine arts, it stands forth as an architectural reproach among its chaste and scholarly environment. At best it is merely of conventional type, one that does but scant justice to its opportunity, and fails in the dignity of expression that should characterize our public monuments. Says the architect of the Fisheries building adjacent: "In England, in France, in Germany, and indeed in all great European countries, the public buildings are the highest and most characteristic efforts of their artificers. It is the ambition of every architect to make himself worthy to be employed upon them. They constitute the great prizes of the profession. We cross the Atlantic to see the cities which they have made beautiful. In our own country enough of treasure has been appropriated for national buildings, and expended on them, to make our cities equally noble and attractive. But under the present system these opportunities have been worse than lost; for they have encouraged an unnecessary extravagance of expenditure without adequate return, and they offer no higher type to be accepted as the expression of our civilization than respectable conventionality and organized commonplace.

"If the suggestive contrasts of quality in the buildings of the Exposition should serve no higher purpose than as an object lesson to our legislators, teaching them that their responsibilities in respect to our national architecture are not properly discharged by maintaining a costly architectural factory at Washington, the unsubstantial pageant at Jackson park will not have been in vain."

In the Government building the unsightliness of its exterior is in part atoned for by its central rotunda, whose mural paintings, representing famous scenes and cities, with symbolical groups beneath, and pillars and arches on either side, are all in the highest form of decorative art. Midway in the pavilion is a hollow section cut from one of the hugest of California redwoods, its interior lighted with electricity, and with a winding stairway leading to a platform above. Within the redwood chamber are photographs, showing how this exhibit was fashioned and forwarded into place. Six of the eight alcoves contained within the rotunda were placed at the disposal of the Board of Lady Managers, by whom is displayed a large number of colonial relics, some of them never before exhibited and all of historic interest, prominence being given to the thirteen original states, nearly all of which are represented. Among the Massachusetts collection is a Bible, printed in 1559, and which came to this country on the *Mayflower*, in the keeping of John Alden. There is the Latin grammar which General Warren studied; a copy of the stamp act of 1765; a fragment of Plymouth rock, and a piece of the torch that lit up the cave at Pomfret, where Putnam killed the historic wolf. Next to the pipe which Miles

Standish loved to smoke, lie the spurs and epaulets of Burgoyne, and near them the fife of Benedict Arnold and the visiting card of Aaron Burr. There are also the proclamations of Governor Hancock, and the ring which he wore while signing the declaration of independence. All these and hundreds of other curiosities are grouped among these alcoves.

In the two remaining alcoves and a portion of the aisle adjacent are the exhibits of the State department, whose object is to explain its functions and operations as a working business office, and as the proper repository of the national annals. The first of these functions is illustrated by sample letters and documents of the several bureaus, and on a series of book-shelves is displayed every class of publication issued by the department since its organization in 1789. On the shelves occupied by the bureau of American history are the records of the revolution with the causes that led to it, the original petition to the king, presented by Franklin in 1774, by the side of which is a collection of his autograph letters and documents. In one of the cases is a perfect copy together with a photographic reproduction of the declaration of independence, with portraits of those who signed it, so far as they could be procured. Here also are the originals of the treaty of peace with Great Britain and of friendship and alliance with France.

DONE IN WATER COLORS

BY AN ABORIGINAL OF BOLIVIA

In the adjoining alcove is a photographic copy of the original constitution of the United States, with portraits of those by whom it was drafted. There are several of the LaFayette relics, of which a larger collection is contained in the French building, and there is a group of Washington relics, including one of his swords, his diary, and other manuscripts, of which a meteorological record is the last production of his pen. There is the original portrait of Washington by Peale, and his statue in bronze by Baron Marchetti. Covering the earlier historical period, and relating especially to diplomatic negotiations, are manuscript documents by Madison, Monroe, Jefferson, Robert R. Livingstone, and others, and with them engravings or portraits in oil. To the more thoughtful observer this is one of the most interesting features of the Fair, and while gazing on these priceless treasures, he wonders how it is that congress has expended many thousands of dollars in printing the records of the secession, and not a single dollar in printing those of the revolution. By a few faithful students of our earlier history these papers were in part transcribed, and thus alone were the public informed of their contents or indeed of their existence.

In a series of maps are displayed the several acquisitions of United States territory, under treaty stipulations, beginning with the treaty of Paris, whereby was acknowledged the independence of the United States, and ending with that which Seward negotiated, securing, in 1867, the possession of Alaska. By maps also is illustrated the consular-diplomatic representation of the United States, the first one bearing date of 1776 and the last, that of 1892. The proclamations of presidents are copied from the original, among them the nullification edict of Andrew Jackson, and the one with which in 1863, Abraham Lincoln broke the shackles of the slave. Then is traced the evolution of the American coat-of-arms or government seal from the earliest design submitted to the first continental congress to its final adoption in 1782, with an emblazoned reproduction of that instrument as it exists to-day, after all the modifications adopted since, by act of 1789, it was provided "That the seal heretofore used by the United States in congress assembled shall be, and hereby is declared to be, the seal of the United States."

INDIAN NEEDLE WORK

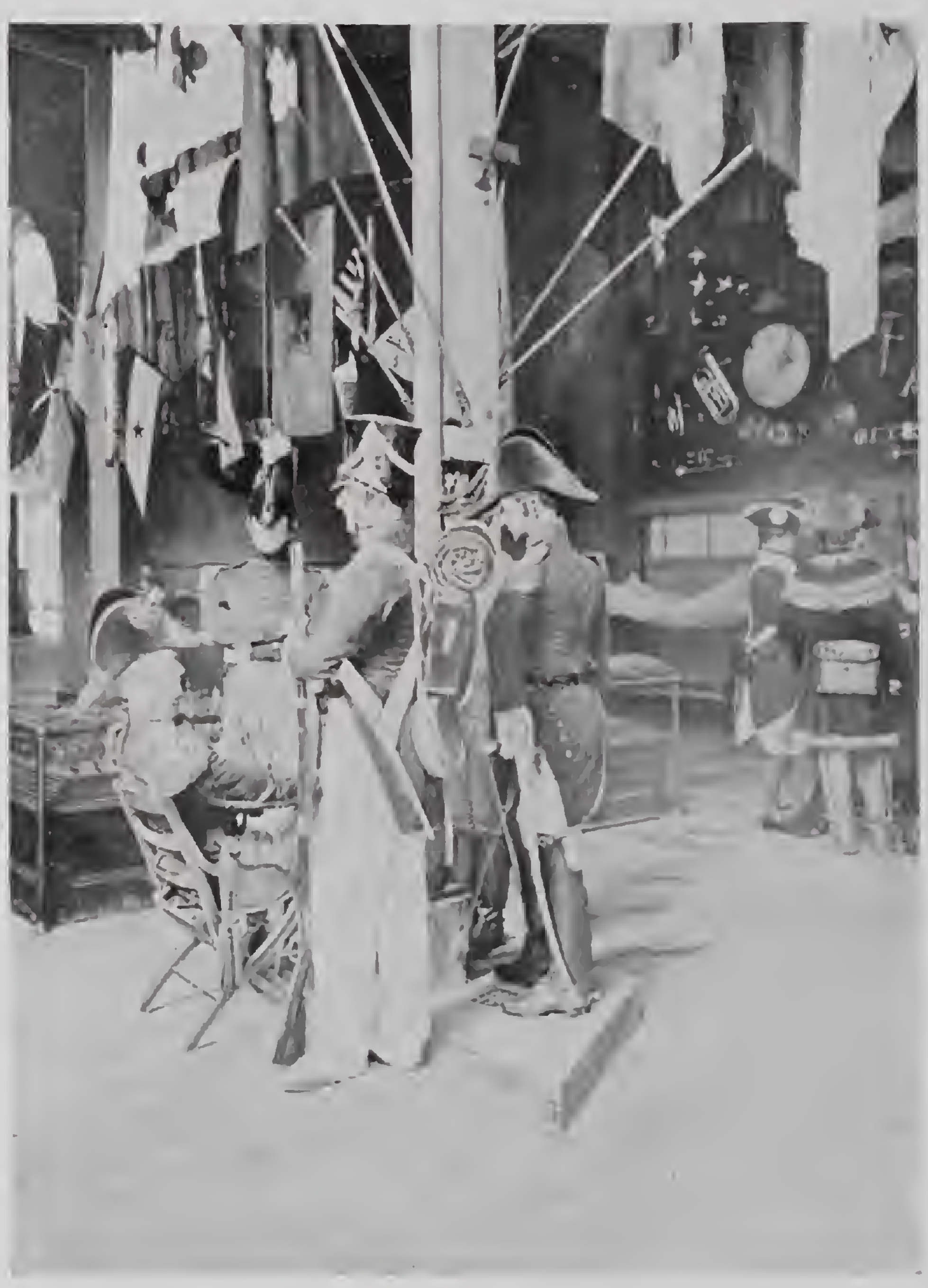
INDIAN LACE WORK

In the exhibits of the State department are included those of the executive mansion or White house, for with the presidential functions this department is more closely allied than any other. In sample letters and blanks, including an original despatch from each of the foreign powers with which diplomatic relations are maintained, one may study the inner workings of the president's cabinet, with the mode of conducting correspondence with foreign potentates and ambassadors.

In concluding this sketch of the State department a brief allusion to the diplomatic service of a century ago may be of interest, if only by way of contrast with the more costly and elaborate system of to-day. By act of July 1, 1790, the president was authorized "To draw from the treasury of the United States a sum, not exceeding forty thousand dollars annually, for the support of such persons as he shall commission to serve the United States in foreign parts." In 1892 such an appropriation would not have served for the single legation at Paris or London, and how to make it serve, in 1792, for the ministers plenipotentiary at each of these cities and for the residents at Lisbon, Madrid, and the Hague, was one of the problems presented to Thomas Jefferson, the first of our secretaries of state.[1] This he solved, as related in the archives of the department, by appointing for the Hague an agent in place of a resident, thus securing a small surplus from his allotted fund. For the salary of a minister plenipotentiary was allowed $9,000; for his outfit one-seventh of that amount; for extras and homeward passage, $671, and for his secretary $1,350; for a resident the total allowance was $5,653, while the agent must be satisfied with $1,650 and find his way home as best he could; but not at the expense of his government. Jefferson himself was content with the modest stipend of $3,500, with $800 for his chief clerk, and $500 for each assistant clerk, as appointed by act of September 11, 1789. If in such modest proportion were the present salaries of our public servants, we might have more efficient service with less unseemly scramble for office.

IN THE DOME GOVERNMENT BUILDING

Opposite the department of State is that of Justice, where are portraits of all the chief-justices and attorney-generals of the United States, together with court reporters. A prominent place is accorded to Judge Marshall, on the right of whom is Oliver Ellsworth, and on his left, Roger Brooke Taney. In a colored chart are displayed the judicial districts of the republic, and that with such clearness and accuracy of delineation that one may readily select and trace the boundaries of each and all. For the student of law there are sets of Howard's and Wallace's supreme court reports, and of the United States court reports, with other law-books and documents more than a century old, and with fac-simile specimens of executive messages from 1789 to 1890, including those of Washington, John Quincy Adams, and Abraham Lincoln.


UNIFORMS, WAR OF 1812

WASHINGTON

From the rotunda access is afforded to the principal exhibits by a series of aisles at equal distances from the centre. To the north is the Fisheries department; to the north-east the Agricultural display; to the north-west that of the interior department; to the south are the collections of the Smithsonian institution and the National museum; to the south-east are the bureaus of the War department; to the west and south-west those of the Treasury and Postoffice. Apart from those contained in the federal edifice there are several attractions in the grounds and waters adjacent, of all of which, and especially of the naval display, mention will be made in its place. First let us make the circuit of the main exhibits beginning with the War department, as one of the largest and most attractive; for amid the temples

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[1] Although John Jay held office for a few months after the department of foreign affairs was merged in that of the state, he never received a formal appointment. In the *Correspondence and Public Papers of John Jay*, III, 369 is a letter from President Washington, dated June, 1789, asking for "some informal communication from the office of secretary for foreign affairs." In September of that year Jay was appointed chief-justice, and Jefferson who had not yet returned from his mission to France, was chosen as the first secretary of the newly organized department of state. After his arrival Jay wrote him a letter of congratulation, in which he favorably recommended "the young gentleman in the office." From his home at Monticello Jefferson writes to the president, February 14, 1790, "I have duly received the letter of the 21st of January with which you have honored me, and no longer hesitate to undertake the office to which you are pleased to call me."—*Id.* III, 381.

CAPTURED AT YORKTOWN

FIRST AND LAST GUNS IN CIVIL WAR

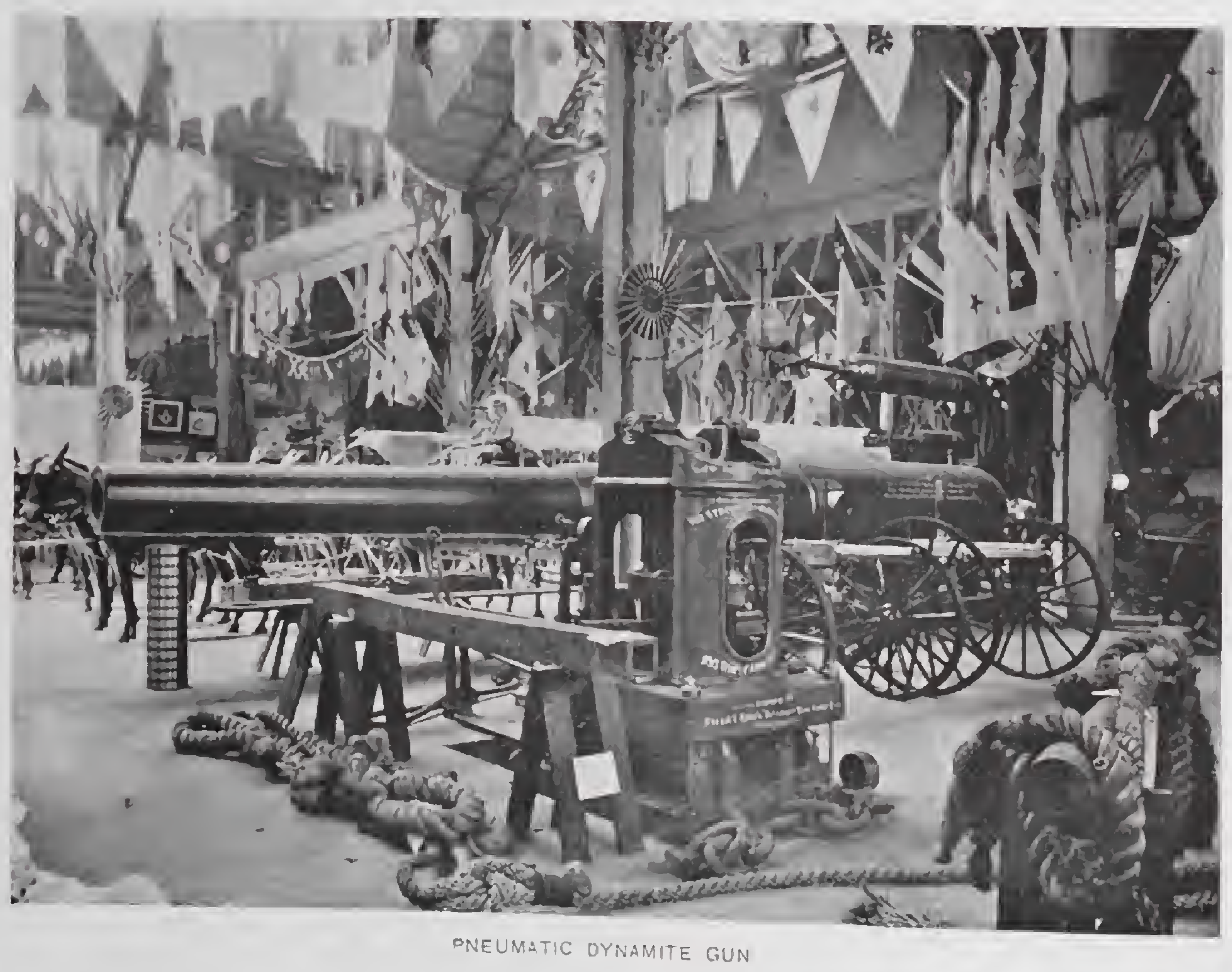
of an exposition devoted to the arts of peace, there is nothing that excites more general interest than its enginery of war.

In this department, under the direction of Major Clifton Comby, with a staff of officers selected from the various branches of the service, is one of the most complete collections, not only of the implements of war, but of historic and other curiosities, ever grouped together for such a purpose. The ordnance section forms of itself an arsenal well stored with the weapons and munitions of war, with guns of the heaviest calibre and explosives such as are used on the battle field or in besieging a city, with smokeless powder, bombs, torpedoes, and all the varieties of fixed and other ammunition known to the several branches of the service.

In the ordnance section the centre of attraction is a twelve-inch breech-loading rifle-gun, weighing 52 tons and carrying a projectile a thousand pounds in weight. Next to it is an eight-inch breech-loader, carrying a 450 pound ball. In the long array of modern swift-firing ordnance are several guns of the Hotchkiss pattern, perhaps the most destructive of modern weapons, one of them throwing twenty to thirty shots a minute a distance of two miles or more. There is also the lightest of light field artillery, a one-pounder Hotchkiss, strapped on the back of a mule, with a wheel on each flank, a miniature carriage, boxes for ammunition, and a soldier's blanket. For an entire battery six loads are required, each of similar fashion, and to unlimber and bring such a battery into action is the work of a very few minutes. On either side of the portal is a mortar of modern make, such as are now being constructed in large numbers for coast defense, and capable of being fired at any angle between horizontal and vertical lines.

Among a collection of historic guns is a six-pounder presented by La Fayette to the republic whose cause he made one with his own, and near it is a British cannon, surrendered at Yorktown. The guns which fired the first and last shots of the civil war are opposite to a bronze six-pounder of the Mexican war, almost as much out of date as the Chinese breech-loader elsewhere in the collection. Nor should we forget an historic weapon of antiquated pattern, presented by the king of Portugal to the United States, at the request of President Harrison. This is the famous gun "Long Tom," whose home, for about three-quarters of a century, was on the island fortress of Fayal in the Azores. During the war of 1812 it was mounted on the spar deck of the privateer, *General Armstrong*, which, under command of Captain Samuel Chester Reid, held at bay an entire British squadron in the harbor of Harta, Jamaica; but was finally sunk, to avoid capture, as a line-of-battle ship came within range. Other curiosities there are, not numerous, but extremely suggestive, including Confederate torpedoes and shells, a collection of historic rifle-balls, two of which met in mid-air at Gettysburg, and, as would appear from their flattened surfaces, with equal propelling force. In the stump of an oak tree are the marks of musket balls by which it was riddled at Spottsylvania courthouse. A cannon wheel tells its tale of the war, as does the case of rusty, twisted, and shattered muskets gathered from many a battle-field.

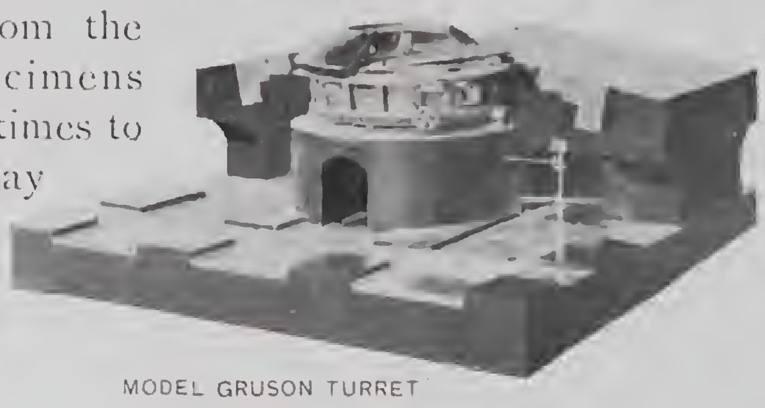
There is powder of all varieties, safely stored within glass cases, from the description commonly used in the civil war to the smokeless explosive with twice its power, and which, now that it can be handled without fear of accident, is gradually superseding the other. Of small arms the display is varied and measurably complete; but in this division the United States appears somewhat at a disadvantage, as compared with European exhibits, more so perhaps than in her collection of ordnance she excels the nations of Europe. This is readily explained by the need of furnishing the standing armies of the latter with the best and most recent weapons, changed at quickly recurring intervals, in keeping with the inventions of science. Here we may compare the Springfield rifle and its trowel-shaped bayonet with the Martini-Henry and its sword-shaped appendage, with serrated edge. Germany and Austria have given us their



PNEUMATIC DYNAMITE GUN

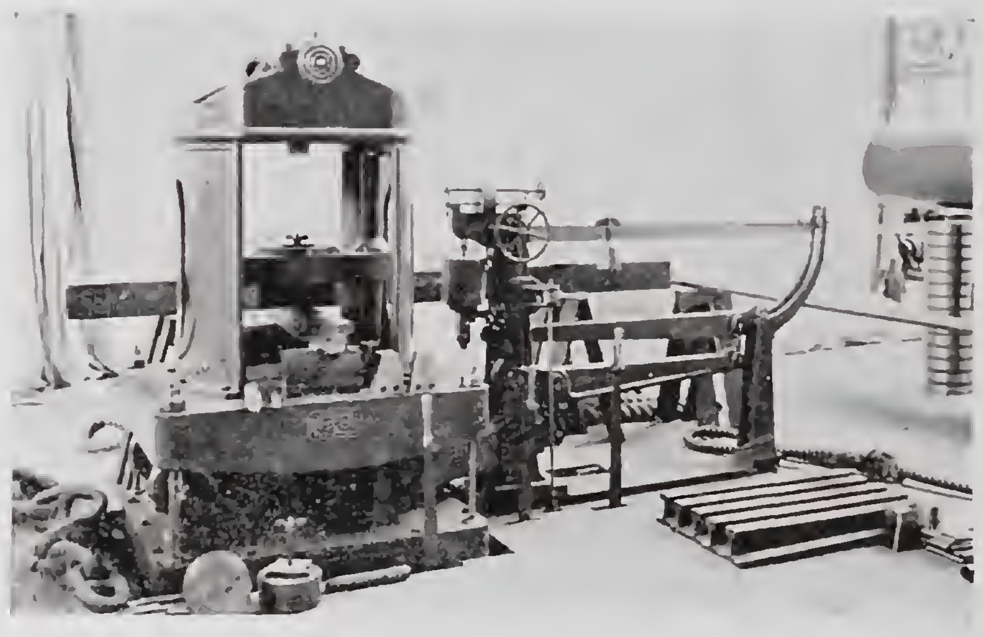
SIMS EDISON FISH TORPEDO

Mannlicher rifles; France, the Lebel, Denmark, the Crag-Jorgensen, and other nations, weapons of great power and precision. But if our collection is not the best, it is by far the most interesting of all, for here are small-arms of every pattern and period, from the earliest specimens of colonial times to such as to-day are stored in the magazines of the war department. There is also a gun-shop in actual operation, where small arms and cartridges are manufactured. The method of making gunpowder may also be studied, but only so far as it is generally known, for the more occult processes are not here revealed.



MODEL GRUSON TURRET

To illustrate more fully the difference between the weapons of the present and the past, the modern exhibit, in the way of small-arms, is in proximity to the historic collection already described. Further to display the progress made in the manufacture of arms, from its earliest inception up to this year of 1893, on the eastern wall adjacent is a series of guns and pistols, from the most ancient up to the most recent patterns. Among the former class is a Chinese wheel-lock pistol, the most antiquated of all, with a heavy wheel-lock musket of the make of 1520, and match-locks of Arabian, Indian and other patterns. Then come flint-locks, first invented in the seventeenth century, and in which the various stages of progress are shown, up to the days of Austerlitz and Waterloo, for it was not until 1820 that percussion muskets began to come into general use.

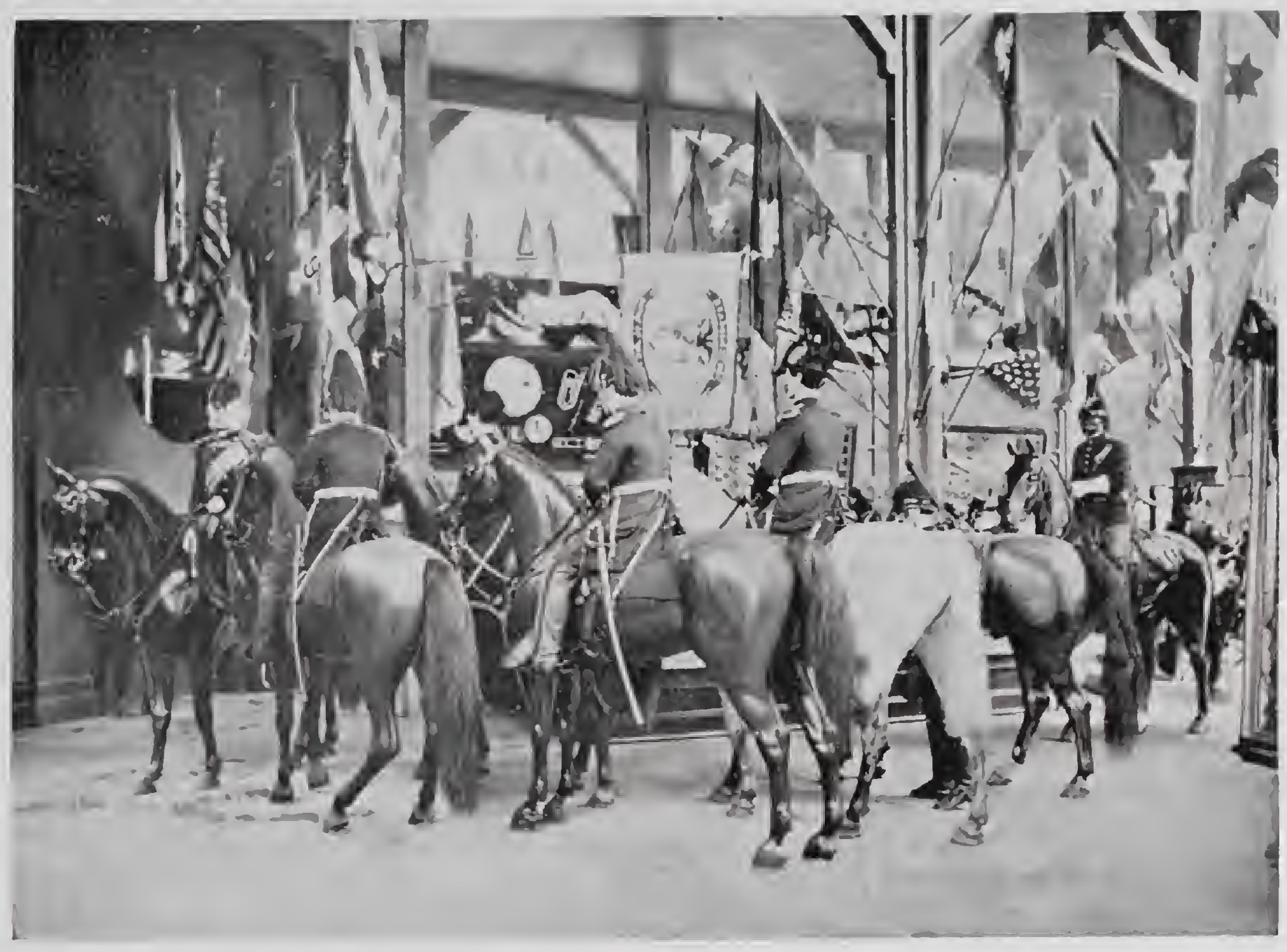


RIEHLE TESTING MACHINE

In the shooting gallery of the Ordnance department are various instruments for determining the velocity of projectiles and the pressure of powder in fire-arms, from the earliest methods to those at present in use. First of all is the so-called powder eprouvette, a small mortar used to test the strength of powder by the distance that a ball is carried by a given quantity. In connection with it is a ballistic pendulum in the form of a swinging block, whereby until recent years pressure and velocity were estimated through the swing of the block under the stroke of a missile. In modern methods velocity is measured by electrical appliances and pressure by the pressure gauge, of which there are several varieties. In the former process the missile passes through two electric circuits, one near the muzzle and the other at a given distance, the interval between the breaking of the currents being recorded by instruments of various dates, many of which are here on exhibition. There are also appliances for target practice, with hand and bench reloading tools such as are used in actual service.

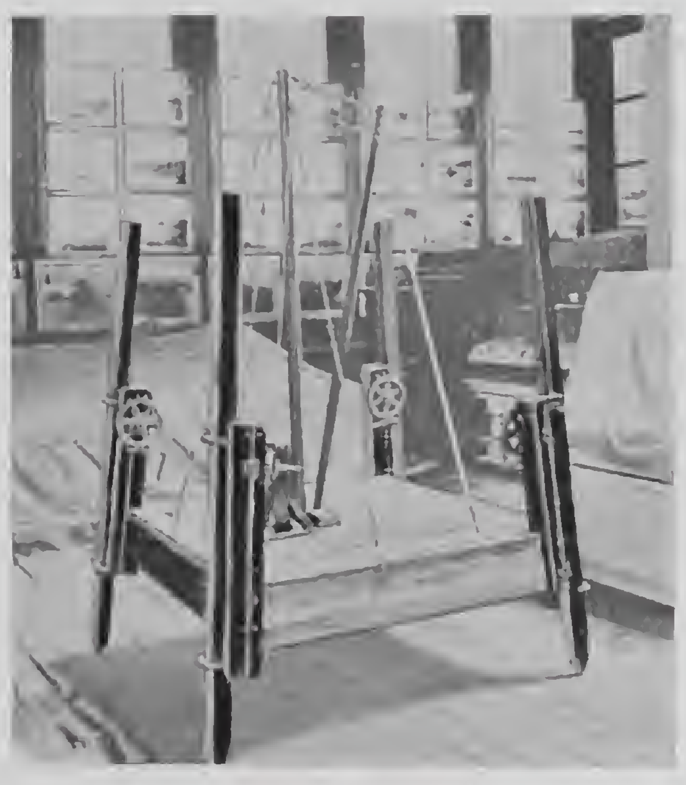
ESCORT WAGONS

In the exhibits devoted to military equipment the observer does not fail to notice the absence of all suitable provision for the soldier's health and comfort. His tent is the same as in the days of the civil war, and the same is the litter which carries the wounded from the field to a hospital of antiquated pattern. So also in the transportation, the commissary, and the quartermaster's departments. The uniform is still the same as that which our troops disgraced at Bull's Run and covered with glory at Gettysburg; nor is it at all superior as to make or material. Of similar pattern is the canteen to that which he filled from the waters of the Potomac; the kettle in which he boils his coffee and the oven in which he bakes his bread are no less old-fashioned; nor is there any improvement as to quality in the damaged bacon and beans, and the coarse brown sugar that complete his diet on actual service.



MAJOR-GENERAL AND STAFF

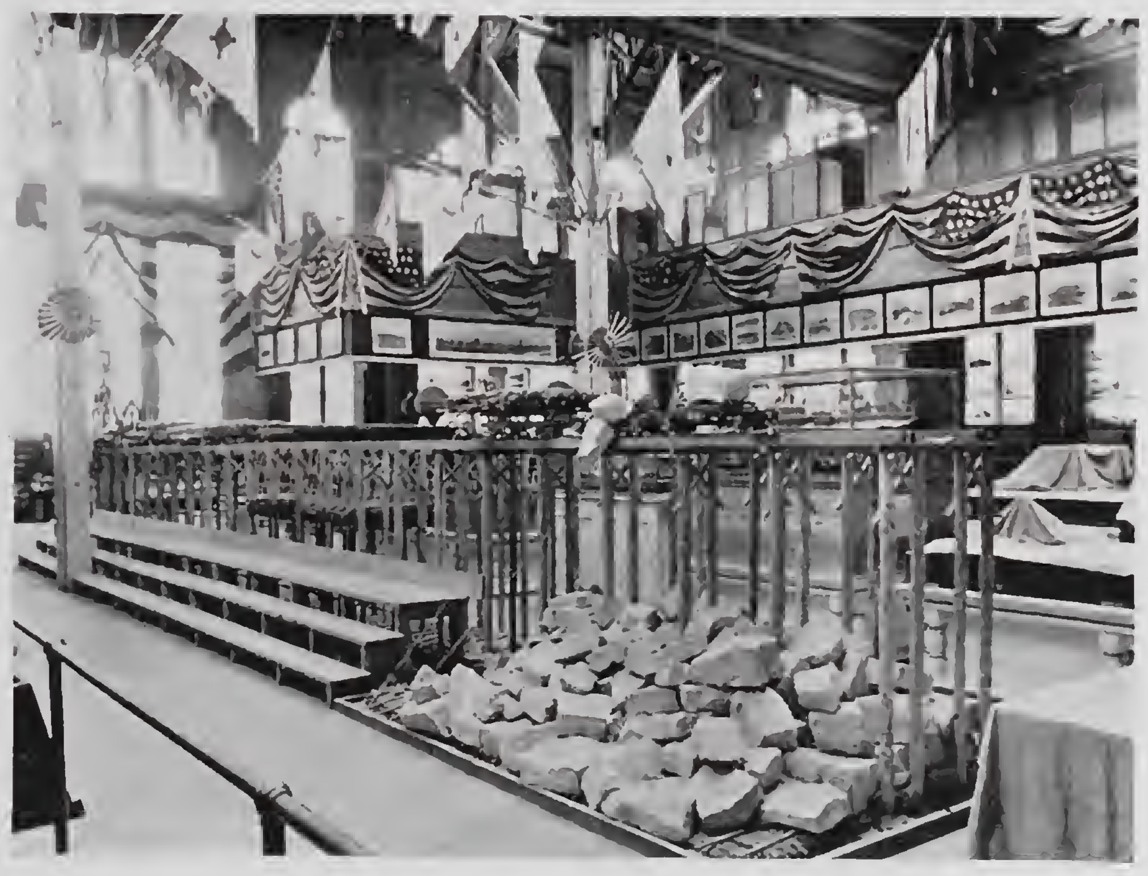
But in the quartermaster's department are more interesting exhibits, and especially those which display the uniforms worn since the colonial period until this present year of 1893, together with the civilian garb in which the pilgrim fathers were attired. On lay-figures are reproduced the regimental costumes of the several ranks, from an era antedating Braddock's defeat, continued through the revolutionary war, to the war of 1812, the Mexican war, and the war which ended at the court-house of Appomattox. In this collection are represented all the more prominent commanders of past and present times. In front is a figure of Major-general Schofield, mounted on a wooden horse, and behind him members of his staff, all in full uniform. Then comes a train of pack-mules, a wagon drawn by a six-mule team, an escort wagon and an ambulance wagon, the last containing a paymaster and flanked by Indian scouts. There are hospital tents and models in plaster of the burial-grounds at Arlington and Fort Sheridan. Finally there is the wagon which, for the five years of the war, carried the effects of General Sherman, and near to it a glass case in which is his battle-flag, draped amid those of several of our military chieftains. In other cases are collections of epaulettes, chevrons, and service stripes pertaining to various arms and grades, with all the equipments and accoutrements of officers and men. Nor should we forget the display of national and other flags depending from galleries and roof and from the pillars which support them, containing in addition to those used under present regulations, the colors and corps and division flags carried by the federal armies.



DRILLING PLATFORM

Turning from the quartermaster's section into the rotunda, the visitor pauses for a moment in front of a large model in plaster, depicting in realistic fashion an Arctic scene of 1882. Here Greeley is in the act of welcoming back Lieutenant Lockwood and Sergeant Brainard, after taking observations as far north as 83° 24″, the highest point of northern latitude as yet attained. Near by is displayed in a glass case an interesting collection of Greeley relics.

In the section allotted to the corps of engineers is a choice collection of photographic views, representing the most notable achievements of this department in the line of river and harbor improvements. In addition to these is a number of transparencies, with handsomely colored views, one with a panoramic outline of Chicago harbor, another displaying the Washington aqueduct system, and a third the movable dam across the Ohio river. There are also models of Hell-gate before and after its obstructions were removed and during the process of removal. Among others are those representing the work accomplished at the mouth of the Mississippi river, at the harbor of Key West, and the Delaware breakwater. A study of the various illustrations will show that the sum of $225,000,000 already appropriated for these and similar improvements has not been expended in vain.



JETTY IMPROVEMENT MOUTH COLUMBIA RIVER

In connection with the war department may be mentioned the army and naval hospital, south of the main structure, where are all the equipments

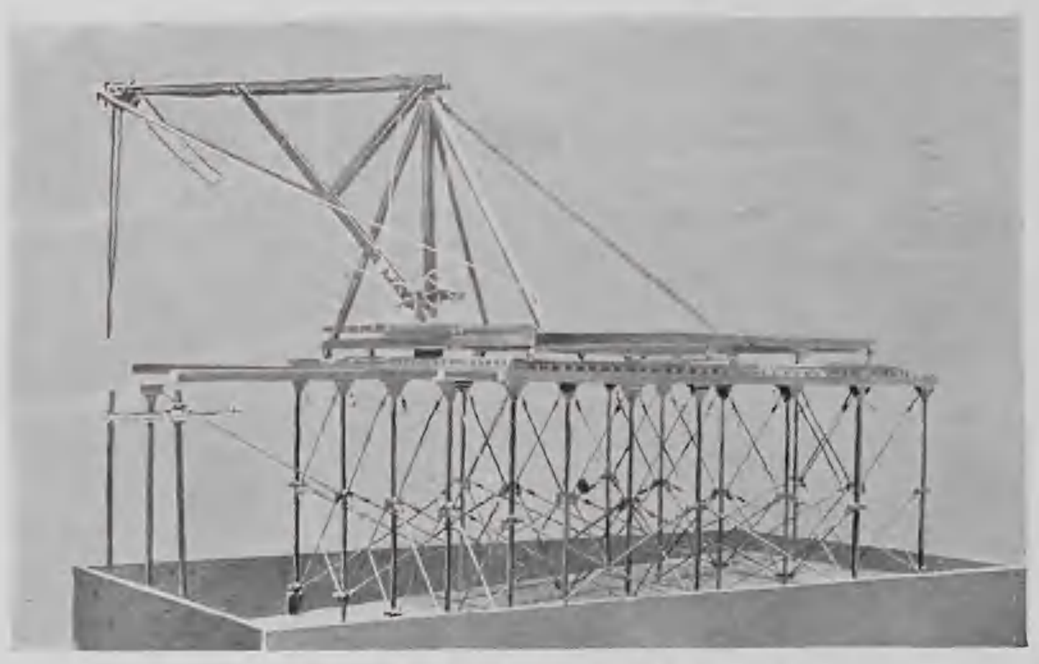
MODEL, SIXTEEN MORTAR BATTERY

and appliances in common use at army posts, with a ward in which are a dozen cots, a dispensary, an operating room, and a collection of pathological and physiological specimens. While the treatment of patients is not included in the programme, the method of caring for sick and wounded men is fully illustrated.

In the medical museum, in connection with the hospital, is a collection of many thousands of skulls and bones, gathered from the battle-fields of the civil war, for the purpose of displaying the effects of wounds from various missiles, with charts illustrating diseased and malformed anatomy. There is also a large case filled with skeletons, scores of which are suspended from the wall in such close array that we might fancy them returning in single file from their own funeral procession. Though many races are here represented, the difference can not readily be detected between the Caucasian, the Mongol, and the Negro. In a corner hidden from sight is the brain of Garfield's assassin preserved in alcohol, and elsewhere are grewsome relics of John Wilkes Booth. On these and other horrors those may feast to the full who will.

Adjacent to the War department are the exhibits of the Smithsonian institution and the National museum, of which it may first of all be said that, while they have taken the first prize at several of the great world's fairs their present display excels all previous efforts. Under the direction of G. Brown Goode, assistant secretary of the institute, by whom were arranged similar collections for the Philadelphia and other American and European expositions, a staff of experts was long engaged in preparing this the largest and most complete collection of all. Moreover, the system of classification and labelling adds largely to its interest, and might have been adopted to advantage in other departments, where the visitor is too often left to grope his way, with the aid of an incomplete and faulty catalogue. Among the purposes of the management, and indeed its principal purpose, has been to show in instructive and entertaining form groups and samples culled from its principal sections, with a view to illustrate the proper methods of mounting, labelling, and installing museum collections. On each specimen is a label and a description, brief but sufficient to afford an adequate idea of that which it represents. Such was the plan adopted by Professor Baird, the founder of the museum, and at the Exposition display no portion of his system has been omitted.

MODEL DISAPPEARING GUN BATTERY



MODEL, CONSTRUCTION OF SCREW PILE

MODEL ARLINGTON CEMETERY

MODEL, SHOWING EXCAVATION

First of all are the ethnological and archæological exhibits, described in another chapter of this work, in connection with those elsewhere in the grounds. Then come the groups relating to physical geology, supplementing, as an illustration of geological characteristics, the mineral display of the geological survey, its own collection being limited

STAND UNITED STATES COLORS

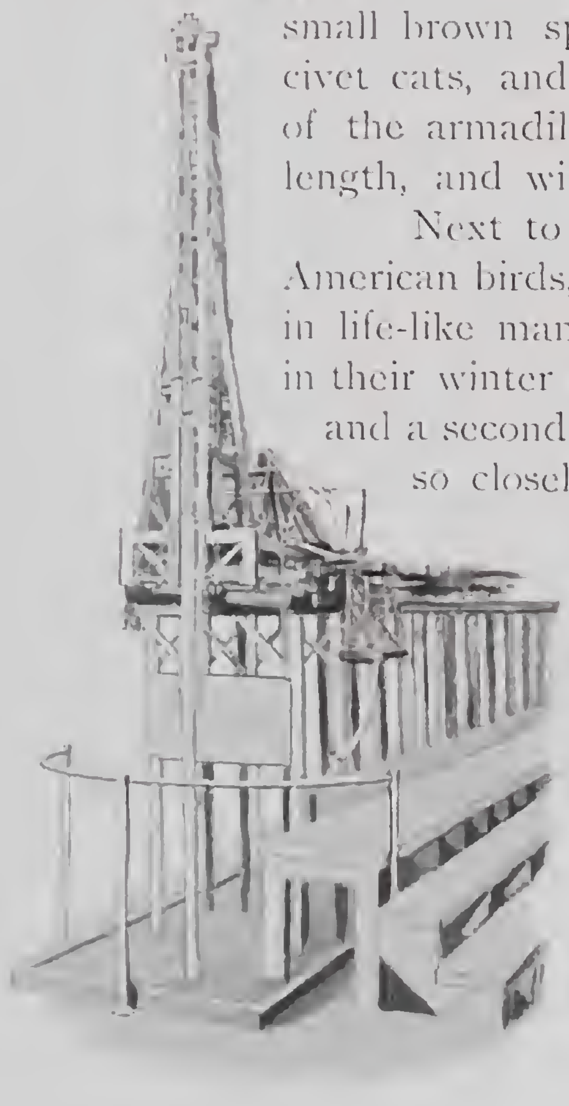
mainly to gems, crystals, and ornamental stones. Here are exemplified cave formations, with the peculiarities of such as are found in the United States. In another group are portrayed the formation and phenomena of volcanoes, active and extinct; in a third the glacial era, showing the portions of the American continent that were covered by ice in by-gone ages.

But to the average visitor the most interesting groups are those of the natural history series, containing as they do the most complete collection extant of American fauna. Here are arranged in regular order, from the monkey classed as the highest to the opossum ranking lowest in the scale, all the families in our animal kingdom, and with rare exceptions all the genera of each family. And so with birds, reptiles, and insects. So far as is possible there is also displayed the environment of the several species, the herbage on which they feed, the trees and shrubs among which they live, and the waters which they frequent. Thus deer may be seen emerging from swamp or forest, the badger at his avocation, the paroquet in the act of feeding, and the hornbill preparing a nest in which to imprison his mate.

WEATHER BUREAU AND LIFE SAVING STATION

In preparing the collection of mammalia skilled workmen were employed for nearly two years under the direction of William Palmer, taxidermist of the National museum, each specimen being mounted in its natural attitude, from sketches and photographs taken from life. Perched on a seaweed covered rock is a sea otter, one of the few perfect skins that have escaped mutilation at the hands of the Aleuts, and secured through the good offices of the Alaska Commercial company. Near it is a walrus, from Walrus island of the Pribylov group. There is also a remarkably fine specimen of the manatee, a species rapidly becoming extinct, and a sea elephant, such as were formerly common along the California seaboard. On a miniature heights is a group of Rocky Mountain goats, and on moss and sand brought from their native homes are Labrador and Alaskan caribou, while burrowing amid cactus and sagebrush are a dozen Texan armadilloes, with California wood-rats nestling in heaps of brushwood. In a tree top is a group of raccoons feeding on berries; of monkeys there is a large collection, one of them a small brown specimen with red face, among the rarest extant. Badgers are there, and tiger and civet cats, and bears, all handsomely mounted, and among other curiosities the smallest specimen of the armadillo genus thus far discovered, a native of the Argentine republic, only four inches in length, and with a sesquipedalian title altogether out of keeping with its size.

Next to the cases containing the animal groups are those devoted to the various families of American birds, the latter among the most interesting of the natural history series. All are arranged in life-like manner; a flock of wild pigeons, for instance, perched on the limb of a tree; ptarmigan, in their winter plumage, grouped on artificial snow, and a second cluster in summer attire, resembling so closely the sere leaves of autumn as to deceive an experienced hunter. In a group of prairie chickens males are represented in deadly combat for the proprietorship of the hens. There are Carolina paroquets, some at roost and others at supper; there is a large assortment of birds of paradise, and of humming birds the most complete collection ever got together. Close to his friend the crocodile is the bird that bears his name, and near by a number



PILE DRIVER AND JETTY

ARMY WAGON AND STAND OF ARMS

MODEL DAVIS ISLAND DAM

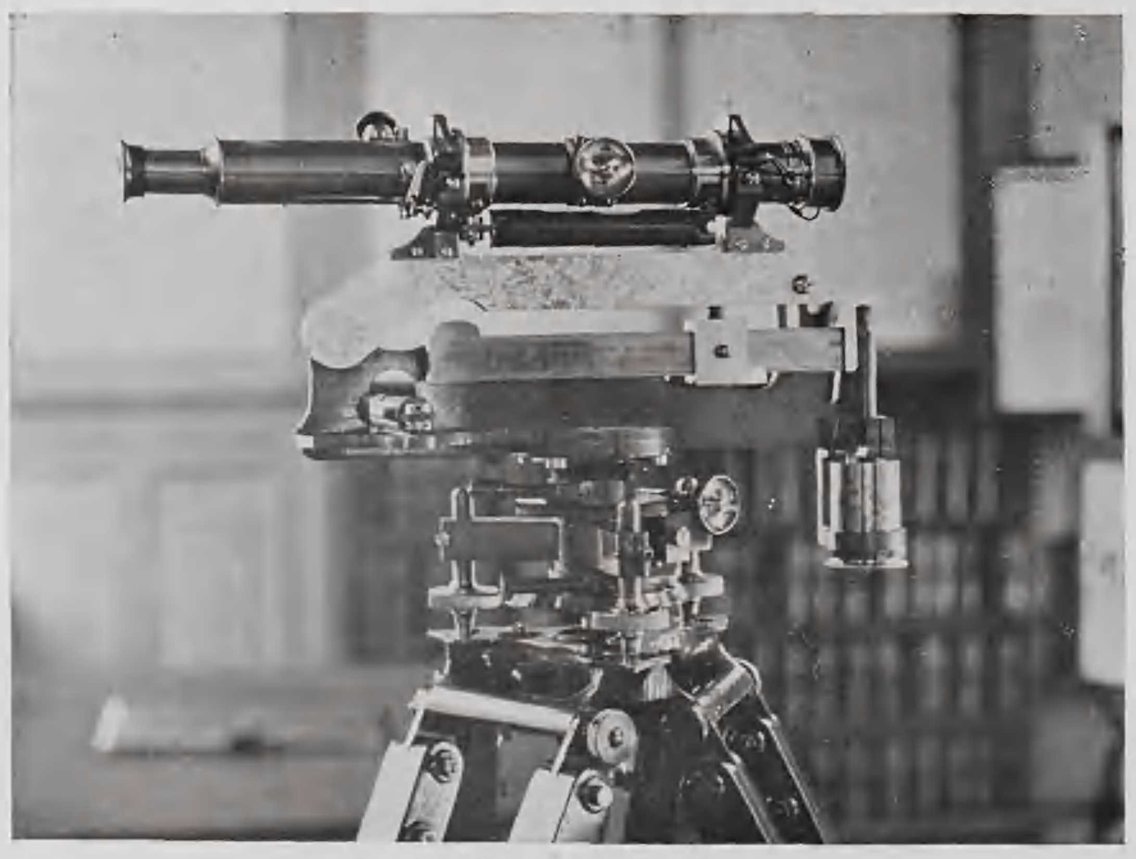
of lower birds, in nests adorned with flowers which, as naturalists would have us believe, they replace with fresh ones when faded.

MODEL, GUN LIFT

In addition to beasts and birds there is a collection of all the principal articles of commerce gathered from the animal kingdom. First of all is a large assortment of goods made of hair, wool, and feathers, the last in the shape of brushes, fans, robes, artificial flowers and feather paintings—that is with feathers in place of pigments. Near to some cases containing various kinds of skins and furs, are groups of leather and leathern goods. Among the latter is the collection of a New York firm including the perfect skins of crocodiles and alligators, tanned in many colors, with those of the python and boa constrictor, the lizard and iguana, the eel and porpoise, tame and wild fowl of many species, with others too numerous to be mentioned, from the elephant to the chameleon, the woodchuck and the domestic cat. Next comes the exhibit of horns and whatsoever is made therefrom, with the ramrod of the Dutch Boer and the war-club of the Hottentot, both of rhinoceros horn, up to umbrella and cane handles, tortoise-shell combs so-called, and all the manifold uses to which horns are applied, not omitting glues and fertilizers.

SELLER'S TESTING MACHINE

Teeth and tusks form another division of the *National museum exhibits, and here is one of* the largest of elephant's tusks, more than eight feet long and weighing nearly one hundred and forty pounds. The manufacture of articles made from ivory is largely illustrated, one segment cut lengthwise, for instance, having brush handles traced on the surface ready for sawing out, while the tip of another serves as a carving-knife handle, and the lower part of the tusk, where the ivory is not solid, is converted into napkin rings. From the tusk of the narwhal or sea-unicorn, whose long and pointed lance of ivory will pierce the side of a ship, there are many beautiful ornaments, and in walrus ivory there are numerous carvings of most elaborate design, the workmanship of Japanese and Eskimos. There are specimens of jewelry and brooches made of boars' and alligators' teeth; there is the sword of the South Sea islander, its edge bristling with the teeth of the shark; there is a necklace of human incisors, and other ghastly exhibits, as of the claws of animals and the joints and finger-nails of men.



WATKIN'S DEPRESSION RANGE FINDER

Of oils there is a remarkable collection, including those extracted from the nose of the pilot-whale and the forelegs of the crocodile, the latter valued as a leather dressing. Here one may compare with olive oil for table use that which, prepared from the fat of the guacharo, serves as a palatable substitute to the native of Equador. Here also are oils made from the entrails of the eel and the fat that underlies the upper shell of the turtle, the former recommended as a specific for deafness, the latter for rheumatism. Still another is the golden colored oil used for water-proof coverings and obtained from a Central American insect, which yields more than half its weight of the grease from which the oil is manufactured. Elsewhere is a collection of materials used for medical purposes, and especially such as insects contribute to the pharmacopœia.

GREELEY EXPEDITION

In another group is an illustration of the various articles manufactured from mother-of-pearl, the shell being cut by a small revolving saw and each part used for the purpose to which it is best adapted. The outer edges, for instance, are made into penholders, and the sections adjoining into knife-handles, while the central portion is converted into pistol-handles, and other parts into cloak, cuff, collar, and shirt buttons. By a careful economy of material all these articles may be obtained from a single shell of the largest size.

To the numismatist the collection of coins and other currency belonging to the National museum at Washington is one of surpassing interest, for in these quaint and curious specimens is traced the history of all the world's principal media of exchange. Here are not only rounded disks of gold and silver, stamped with various devices, but metals, precious and base, of all classes and shapes that have been used as current funds since the days when Saint Peter extracted from the mouth of a fish the tribute to be rendered unto Cæsar. Among them is the Chinese knife money, pieces of razor-shaped iron, six inches long, current in the first century of the Christian era, before which date knives were actually used as money. There is also the ring money which to Gaul and Briton served for ornament or cash, often forming his entire worldly wealth. Of these was unearthed in Staffordshire, England, nearly two centuries ago, a specimen containing twenty-six ounces of pure gold, some four feet long, and with all the ductility of the virgin metal. Other curiosities are the brick-salt money of Abyssinia, moulded into shape at the king's storehouse, and the brick-tea money of Siberia, by the value of which is largely regulated the price of other commodities.

THE FARTHEST NORTH

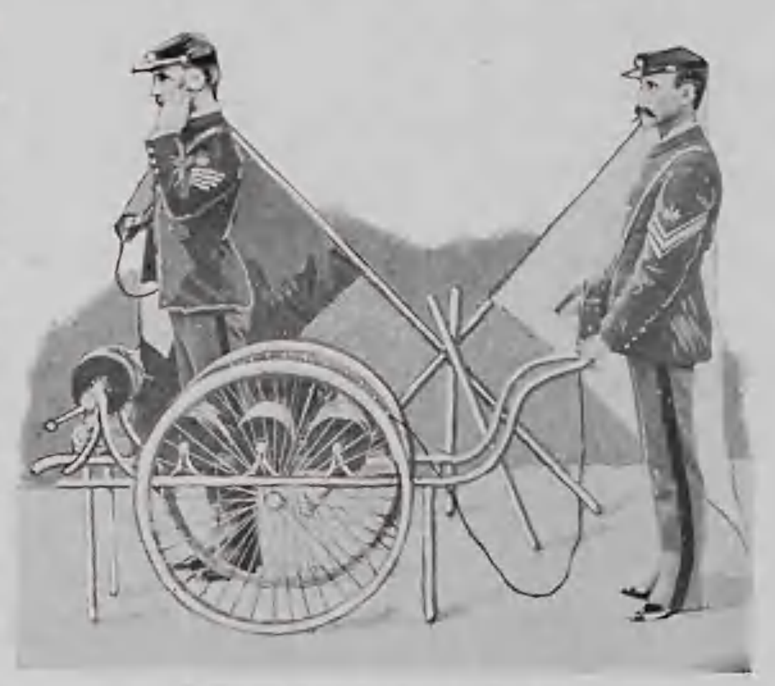
Of American coins the earliest are the disks of copper minted by Cortés, and next in chronological order the copper coins of the Bermuda islands, the material for which was imported from England in the seventeenth century. Bearing date between 1737 and 1739 is the earliest coinage of Connecticut, also of copper, the workmanship of a colonist named John Higley and made from ore discovered on his homestead. On one side is the inscription, "I am a Good Copper;" on the other, "Value Me as You Please." These and other curiosities without number are exhibited in the assortment of the National museum, which, together with that of the treasury department, forms one of the most complete collections in the world.

MODEL GREELEY EXPEDITION

At the southern end of the Government building and on the left of the southern portal is a chamber devoted to the religions and priesthoods of the world, their ceremonials, costumes, manuscripts, relics, traditions, statuary, and other objects of interest to the curious or the devout. In the first case is a breastplate of silver and gold, on which are the tablets of the decalogue, and near it are scrolls of the law in minute characters, with tapestry work representing the sacrifice of Isaac and costumes of Jewish rabbies such as are worn in Mohammedan countries. There are also Hebrew manuscripts, including those of the pentateuch and of the book of Esther, with ancient manuals of devotion, and a Jewish marriage contract in illumined characters inscribed on parchment. Another case, devoted to the ceremonials of oriental Christian churches, contains

HOTCHKISS MOUNTED GUN

Russian ikons, the vestments of a Russian priest, and scenes from the life of Christ and the virgin, studded with pearls and precious stones. In a third is the Koran with illuminated text, resting on a stand inlaid with mother-of-pearl and inscribed with a Mohammedan invocation bearing the date of 1210. In the Assyrian display is a bas-relief of an eagle-headed divinity and a cast of Shamosh, the Assyrian god of the sun, taken from the original in the royal museum of Berlin. In the Greek and Roman sections are casts of their favorite deities, of the muses, and of historical figures, some of them reproductions of antique statuary contained in European capitals.



REEL CART WITH FIELD TELEPHONE

On the walls of this room are pictures of mosques and harems, of worshippers in attitudes of penance and devotion, of wedding and other ceremonies, and of oriental scenes in far off eastern lands. Musical instruments there are in abundance, many of them of most primitive device, as the rattle of the Haida Indian, the xylophone of the Zulu, and the drum of the African negro, with gongs and horns, harps and guitars, lutes, zithers, and violins, all these and others gathered from many nations and in every conceivable pattern. Of pottery there is also a large collection, showing the development of the ceramic art from its inception to the present day. The engravings include specimens belonging to the fifteenth and sixteenth centuries, historic and symbolical figures, and etchings, drawings, and color prints of scenery and ancient ruins.

In an adjacent room on the opposite side of the nave is a large collection of photographs of prominent Americans, including members of the continental congresses, the federal congress of 1787, and the American academy of sciences, with an assortment of curios, as old colonial bills, powder horns of the revolutionary period, engraved with battle scenes, models of the viking ship and other ancient craft. Several cases are filled with medals, forming what may be termed a series in medallic history, beginning with the one with which William Penn commemorated his treaty of peace and friendship with the Indians, and that with which George III pretended so to do. Then come the medals of the revolutionary era, including among others of value those presented to Lafayette, a Dutch medal acknowledging John Adams as envoy to Holland, and a number of Washington medals in honor of his battles and his inauguration. There is also a large array of the military, civic, and ecclesiastic medals of other countries, the first including those of the Peninsular wars, and the last one issued by order of Napoleon I. Finally there is a collection of coins, of which the oldest was minted in England in 1615. Others worthy of note are a Washington two-penny piece of 1795, and pieces of Mexican cob-money, roughly hammered into shape and stamped with the arms of Spain.

MODEL, CASA GRANDE, ARIZONA

EXHIBIT, GOVERNMENT BUILDING

In the Treasury department, adjoining that of the National museum, are portrayed the financial history and financial condition of the United States, from the war of independence, when continental money ranked lower than the Argentinian currency of to-day, until, in this year of 1893 our bonds sell almost on a parity with British consols, esteemed as the most stable of national securities. Here he who will may study the operations of one of the heaviest of coining presses, not in the act of producing coins, but stamping medals of bronze for those to whom they may be awarded. In truth it is a powerful machine, and yet not more so than its uses demand; for to coin the half dollar with which the Fair

MODEL, CLOSING SECONDARY CHANNELS

pilgrim pays his admission fee requires a pressure of more than 200,000 pounds, and for a silver dollar more than 300,000. It produces, moreover, every coin in use, from a one-cent piece to a double eagle, and that by merely changing the die.

In show-cases adjacent to the press is the treasury collection of coins and medals, forming, as I have said, in connection with that of the National museum, one of the largest and most valuable collections extant, valuable more for the rarity of its specimens than for their intrinsic worth. Started in 1830 this collection includes nearly every description of coin issued by the government, beginning with the first one, minted in 1792, in the form of a silver half-dime or disme, as our forefathers termed it. Most precious of all is a dollar of the mintage of 1804, one of the few that remain, and worth many times its weight in gold. In all there are 7,500 rare coins and 2,500 medals; nor is the collection limited to American coins; for here are not a few gold pieces from two to three thousand years old, with the shekel of the Hebrew patriarchs, the silver currency of Ægina, and the golden stater of the Alexandrian era.

SCALP

INDIAN FEATHER WORK

OF THE SIOUX NATION

LITTLE WOLF

LITTLE CROW

Elsewhere are exhibited in a gilt frame of cunning design specimens of all the paper currency, bonds, and other certificates of value at present in use. Here are treasury notes ranging in denomination from $1 to $1,000, with four-per-cent bonds of a face valuation of $50,000 and a market valuation of nearly $60,000, with gold and silver certificates representing fabulous amounts, but not, it need hardly be said, in convertible shape, the bills and bonds being printed only on one side and with portions of the numbering omitted. In a word we have here a complete reproduction of the currency system of the United States, including all such outstanding obligations as are represented on paper.

In the frame adjacent are copies of the commissions, official invitations, and other documents issued in the name of the United States, together with a collection of stamps. In a third case are the vignettes of all whose portraits have appeared on certificates of value or other instruments issued by the national government, including those of all the secretaries of the treasury, from Alexander Hamilton whom Washington appointed, to John G. Carlisle whom Cleveland called to office. There are pictures of such historic events as have been used for symbolic decorations, as the landing at Plymouth rock and Perry's achievement on Lake Erie, and vignettes of many of the more prominent generals of the civil and other wars. Side by side with Winfield

LIMESTONE CAVERN

AMERICAN BADGER

WARRIOR

SMITHSONIAN EXHIBIT

Scott, in the stiff uniform of his day, is General Custer, attired in the frontier garb which he loved to wear. Grant, Sherman, and Sheridan are there, with others whom the nation will never forget to honor, and among statesmen and financiers are many whose names have long been household words throughout the land.

In connection with the Treasury department may be mentioned the exhibits of the United States Coast and Geodetic survey, consisting largely of the instruments used in this branch of the service. But here the centre of attraction is a device representing in plaster of Paris the surface of the United States, with an area covering about four hundred square feet and a scale of one to each million inches of actual area. The true contour and curvature of this portion of the earth are also delineated with accurate distances and elevations. At intervals from the coasts a series of blue lines represents each increase of a thousand feet in ocean's depth. Around the map is a stairway with landings, about two feet from its surface.

KIOWA GIRL

INDIAN LACE

In the Lighthouse exhibit, adjacent to that of the Geodetic survey, are models of old lighthouses, lightships, buoys, and river-lights, with large illuminating apparatus containing hyper-radiant lenses ranged and numbered in the order of their strength and brilliancy. Elsewhere in this department are the outfit and implements of a lighthouse keeper, his chest of tools and his working library, with photographs and paintings in oil and water colors of the lighthouses along our coasts, showing the materials of which they are built, some of timber, some of steel, others of boulders of rock, and still others resembling an old-fashioned water tower or wind-mill.

CHIEF

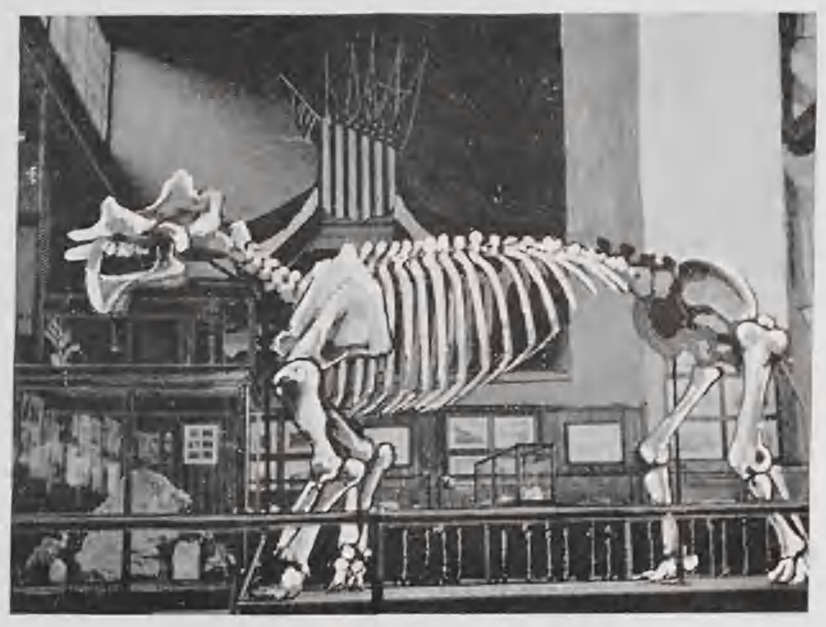
In the Postoffice department is first of all a branch in practical operation, connected with the main Chicago office, and not only as a distributing point for mail matter, but for the registry of letters, the issue of money orders, and the sale of stamps. An interesting feature in this connection is a combination postal car for letters and newspapers, of most recent pattern and manned with the most expert of sorters and operators. Here the entire mail gathered within the grounds of the Fair is sorted, placed in pouches and sent forth for distribution, wagons delivering and receiving the mail-bags direct from incoming and outgoing trains. The car itself is a model of workmanship, constructed by the well-known car-building firm of Wilmington, Delaware, and named the Benjamin Harrison. It is sixty feet in length with five-foot platforms at either end, painted a light cream color and handsomely upholstered and equipped, the interior finished in white ash and with furniture of maple and mahogany. Except that it is stationary this model resembles in all respects a postal car in actual service. The working space is divided from the main lobby by a screen surmounted with glass, on which are the names of the various departments, beyond which may be partially observed the workings of the department. The service is further illustrated by a collection of uniforms, fac-similes, and models, belonging

ON THE MOVE

UTE WOMAN

to the museum of the Postoffice department at Washington. Side by side with a pony-express rider is a letter-carrier mounted on a bicycle; near to a mail-coach of antiquated pattern, which saw hard service in the Rocky mountains, and in 1877 was captured by Indians, is a miniature postal-car completely equipped, and in company with one of the old-fashioned mail steamers that plied on the Mississippi in the days of the Mexican war, is a beautiful model of the steamer *Paris*, one of the floating palaces used for the postal transport of the present day.

INDIAN POTTERY


MARSH'S FOSSIL MAMMOTH

A feature in this department is the collection of stamps, gathered by the American Philatelic association, and dating back almost to the invention of the adhesive stamp in the office of a Dundee printer in 1834, though such were not in public use until several years later, the first in the United States bearing the date of 1841. From a few thousands issued in that year the number has increased to 700,000,000 or 800,000,000, New York alone consuming 100,000,000 a year. Of nearly all that have been used up to 1893, including those of other lands, there are samples on exhibition in the gallery, where also are the offices of employés. On the walls are portraits of all who have held office as postmaster-general, and in some of the alcoves those of presidents and justices of the supreme court.

NAVAJO LODGE

INDIAN POTTERY

But to the average sight-seer the most attractive exhibits in the postal department are those which contain the unclaimed packages of the dead-letter office, for never before was such a heterogeneous assortment of odds and ends collected within so small a space. In truth it is a fitting accompaniment of an exposition intended to display all the products of soil, mine, and sea, for many of those products, including also the denizens of air, are to be found in these grotesque and strangely blended

MODEL CASA BLANCA, ARIZONA

INDIANS, COLOMBIA

SMITHSONIAN EXHIBIT

EDUCATIONAL EXHIBIT

groups. In one case is an owl perched on a human skull; in another an Indian scalp, side by side with a Chinese doll; in a third a string of battered Mongolian coins. Pistols there are of quaint and olden pattern, with knives and daggers, axes and hatchets, stuffed birds and reptiles, centipedes and tarantulas. Next to a group of bronze medals, a package of tobacco awaits its owner, and elsewhere in this postal morgue are jars filled with snakes preserved in alcohol, and flanked with bottles of whisky. On each article is placed the address, and on some the letter that accompanied it; thus, among other purposes, the Fair may serve as a means of restoring to owners some of their stray effects.

PACIFIC WALRUS

ROCKY MOUNTAIN SHEEP

In the exhibits of the Interior department
all the functions of this branch of government are
clearly illustrated, its sub- divisions including the
Education, Land, and Census bureaus, the Pat-
ent office and the Geo- logical survey. The dis-
play is further enriched by curiosities gathered.
the world over, by John M. Ewing, as special
agent, with a corps of assistants in each of the
several bureaus, while to its groupings and classifi-
cation, under the man- agement of Horace A.
Taylor, no exception can be taken. Of such ex-
hibits as relate to eth- nology, archæology and
kindred subjects, men- tion will be made in a
chapter specially devoted to such topics.

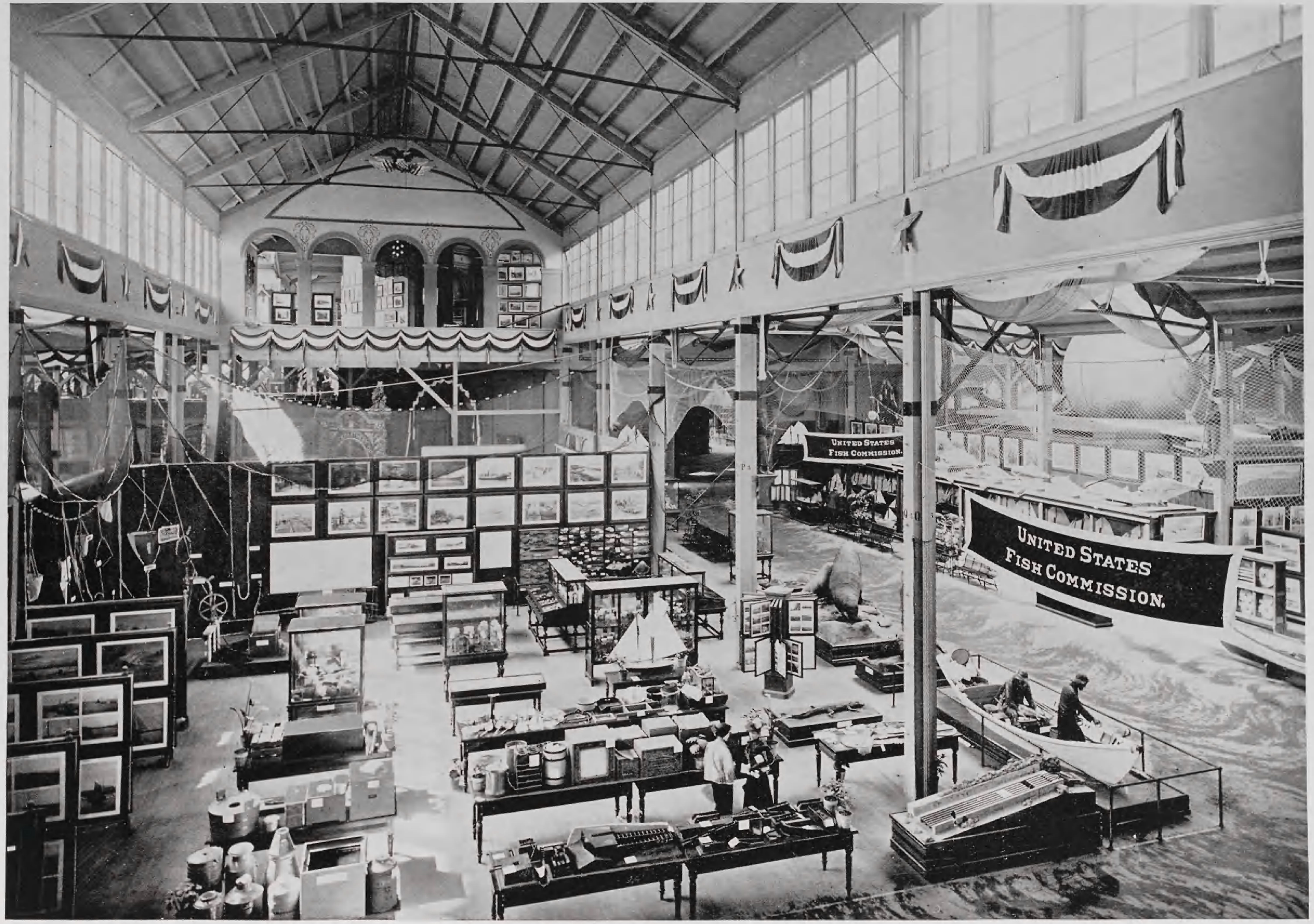
The exhibits of the bureau of education are
classed in four divisions, first among which is the
one relating to Records and Correspondence, in-
cluding the collection, publication, and diffusion
of information, with sta- tistical charts presenting
in figures and by means of graphic devices data
collected from the public and other schools and
colleges of the United States. In the division
of International exchange is a comparative exposi-
tion of foreign educational systems.

In the Library and Museum, which form the
third and fourth divisions, are catalogues of all the
principal collections of school and college text-
books in the United States. There are also samples of text-books printed during the earlier colonial period in New England, Virginia, and Pennsylvania, and opened at such pages as display the characteristics of the era in which they were published. There is a library devoted to the science of teaching, and to general instruction, where is illustrated the best system of utilizing a small collection, say of two to three thousand volumes, whether for school or other purposes. By models and charts is shown the method of administering such libraries in France, with the classes of books that are circulated and some of the results attained.

PACIFIC CALF SEALS

In the Museum are water-color and other paintings, with drawings, prints, photographs, and models, showing the evolution of the modern school building and grounds. Among

WOODLAND CARIBOU


UNITED STATES FISH COMMISSION.
UNITED STATES FISH COMMISSION.

INTERIOR GOVERNMENT BUILDING

the models are those of the primitive school-house of logs or sods, of which there are still many actual specimens extant. As exhibits of school furniture and fittings, the models of the Patent office have been borrowed for the occasion. The collection of school apparatus is devoted mainly to object teaching, and includes such as can be made by the teacher. Methods of objective teaching are also illustrated, such as are adapted to laboratories and training-schools, with experiments by teachers and students in chemistry, electricity, and other branches of science. Finally it is shown how, for a brief course of instruction, these branches may be so arranged as to obtain the best results at the smallest expenditure of time and money.

PTARMIGANS

SATIN BOWER BIRD

LONG EARED OWL

In the space devoted to the general land office are displayed the methods of obtaining government land and the process of acquiring title until confirmed by patent. On maps and charts are outlined the sections disposed of to actual settlers or remaining unoccupied at the time of their delineation, with location, character, and capabilities, whether as agricultural, pastoral, mineral, or forest lands. On the walls are copies of the actual patents whereby the government itself acquired possession, with such as were granted to the earliest settlers in several of the original states. While of practical value, the display of the land office and public land system is also an educational and historical collection. Here is presented in attractive guise a complete record of the country's progress, its various acquisitions of territory, by cession, purchase, or occupation; the surveyed and unsurveyed public lands in each state and territory and the areas granted to railroads, with their settlement and development.

MEXICAN JACANAS

DOMESTIC PIGEONS

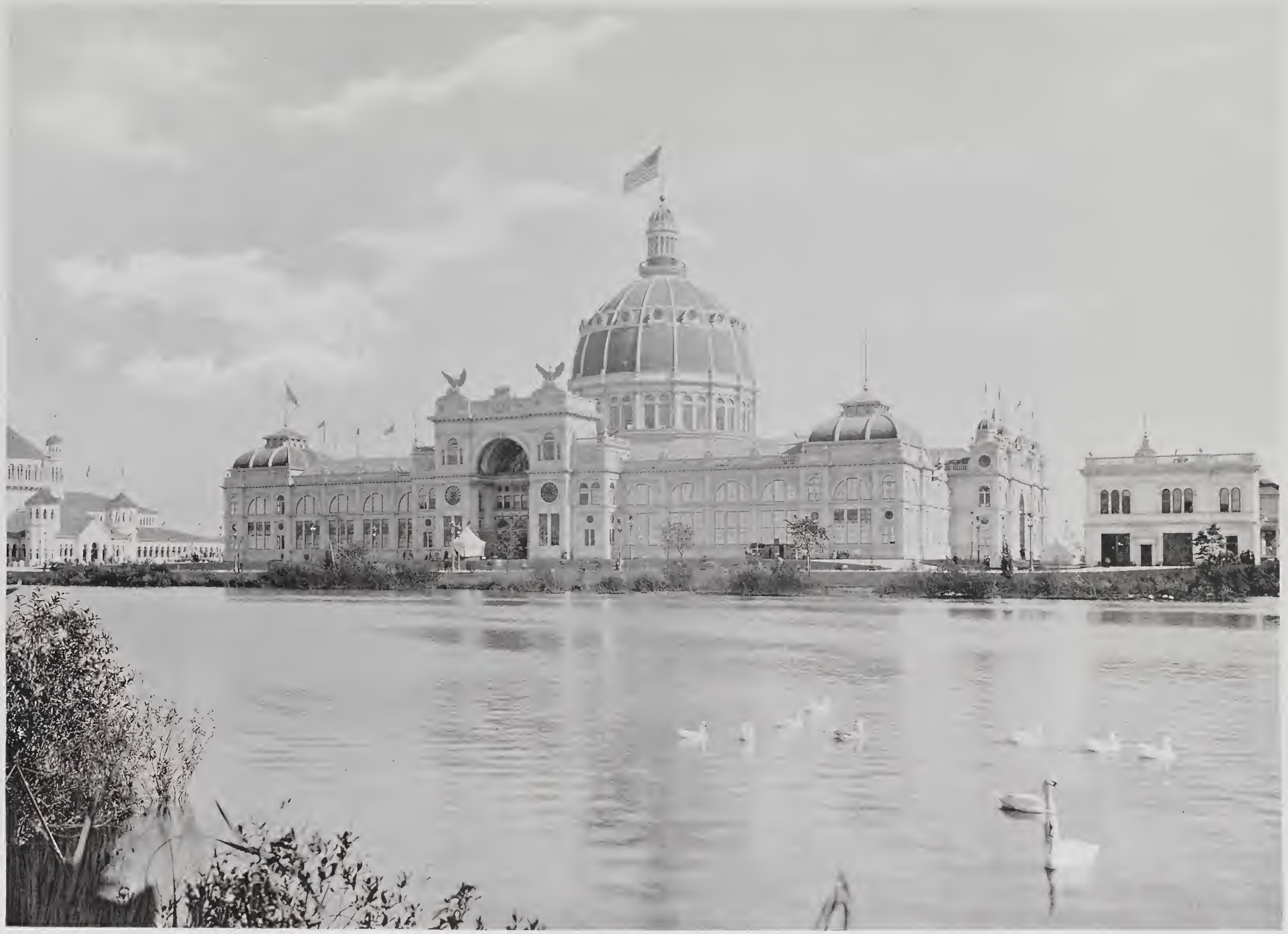
EXHIBIT, GOVERNMENT BUILDING

One of the most interesting exhibits is a mammoth terrestrial globe, probably the largest in existence, and yet with all the accuracy of delineation that science and mechanism can bestow. The globe is 63 feet in circumference, 20 in diameter, 1250 in superficial area, and mounted as it is on a star-shaped structure which serves as pedestal, 15 feet above the floor, over-tops the surrounding exhibits. On its face oceans and continents are reproduced on a scale of one and three-quarter inches to a degree, measured at the equator. The boundaries of all the countries of earth, their surfaces and subdivisions, the sites of

COOPER'S HAWK

PTARMIGAN

CALIFORNIA WOOD RATS



GOVERNMENT BUILDING FROM THE SHORES OF THE WOODED ISLAND

CENSUS BUREAU

the larger cities, the limits of ocean and of inland seas, and the courses of rivers and streams are portrayed in skilfully shaded colors and with singular fidelity. Parallels and meridians are also indicated, with zone and isothermal lines, with the principal steamship lines, and with the course of the great discoverer clearly traced, on the first of his New World voyages.

Suspended from the structure beneath are maps of Washington, Idaho, Montana, Wyoming, and the two Dakotas, the last admitted among the sisterhood of states. Entrance is afforded through several doorways, beneath a drapery of flags, in the artistic blending of which is no combination of the colors of rival nations. An interior stairway in the chamber formed by the pedestal leads to a balcony around the base of the globe, which rests on a horizontal axis, and not as the earth revolves in space, thus permitting a clearer view of the surface, which is lighted by electricity. At the lower axis, within the antarctic zone, where there is nothing to be depicted save for the shadowy outlines of Graham's land, is the apparatus for turning the globe concealed under a huge design representing the seal of the land office. Through an ingenious device the interior may be lighted by electricity, giving to the outer surface a novel and pleasing effect.

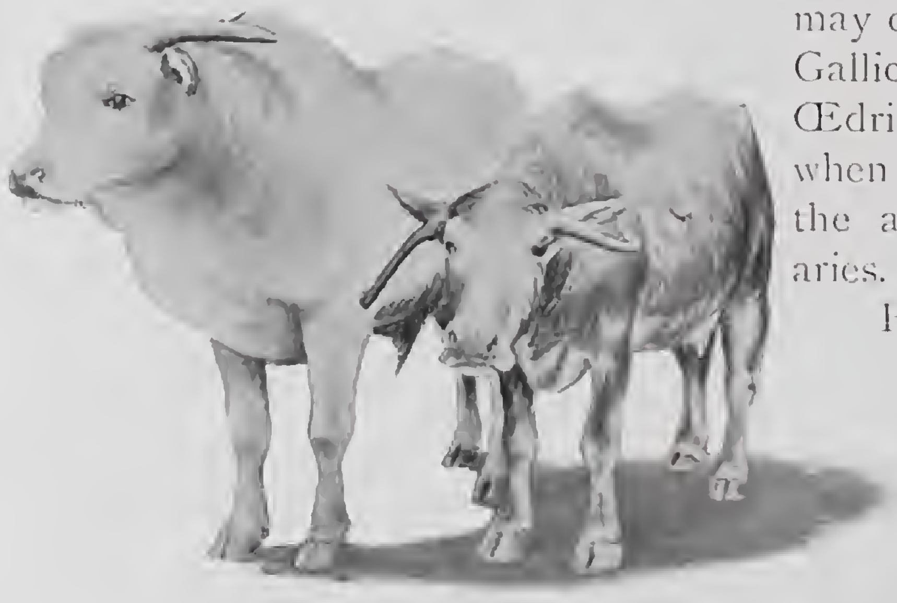
WILD CATS

LLAMA, PERU

In the space devoted to the Census bureau may be seen in actual operation the Hollerith tabulating machine, with employés of this department assigned for special duty, by whom the visitor, whose curiosity may so incline, may place on record his age, size, nationality, birthplace, and such other details as come within the province of the census taker. There is also a collection of charts and maps, showing the resources of every section of the United States and their adaptation to various branches of industry, with a long array of statistics more voluminous than reliable.

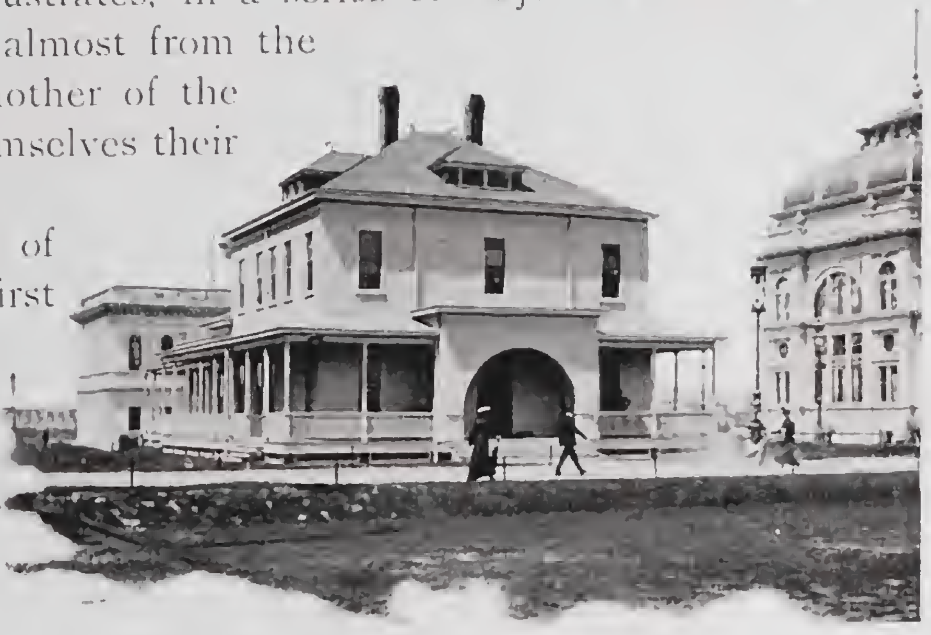
To the visitor whose tastes or faculties incline to invention the northwest portion of the Federal building is one of the most attractive spots in the home of the Fair; for here in a long array of glass cases are the models of the patent office, containing not only the leading inventions of recent date, but a historic collection, illustrating the progress of the world in this direction and especially the progress of the United States. And not alone to the man of science but to the casual visitor are these among the most interesting of all the Exposition groups, for never was gathered so rare a collection of curiosities. Here, for instance, the farmer may study the various stages of invention whereby has been evolved the modern reaping machine, up to the latest device of the McCormick pattern, and this he may compare with one of ancient Gallic construction, such as the Œdric or Helvetic may have used when disturbed at their task by the approach of Cæsar's legionaries.

MEDITERRANEAN OCTOPUS


BULLS INDIA AND AFRICA

From nearly a quarter of a million of models and specimens little more than 2,500 were selected for representation at the Fair; and these have been chosen with care and judgment, with a view to their practical or scientific value, and excluding all mere ingenious toys or such as would give to the display an element of the ludicrous and grotesque. To cull these exhibits from the huge collection of the patent office was a two years' task for three of its most expert examiners, and, as the result, they have given us, within moderate limits, a collection which illustrates, in a series of object lessons, the history of human invention, almost from the days when the father and mother of the human race invented for themselves their rude and scant apparel.

OVERLAND COACH


GOVERNMENT HOSPITAL

Among the exhibits of telegraphy is displayed the first huge, unwieldy instrument for which a patent was issued, and with it, in order of date, all the principal improvements, culminating in what appears to us the well-nigh perfect instrument of to-day. In similar fashion is reproduced the history of telephones, beginning with the Bell telephone in 1876. And so with printing presses; we have first an exact reproduction of the one which Guttenberg put together near the middle of the fifteenth century; then come the more recent types of hand-presses; then cylinder presses, with all their ramifications; then, in progressive series, the web perfecting presses, and finally the Hoe press of latest pattern, such as furnishes the breakfast tables of New York with their relish of news and scandal at the rate of seventy thousand an hour.

CORAL

Somewhat to his surprise the average visitor will learn that the first type-writing machine, its patent signed by President Andrew Jackson, was invented in 1829 by one William Burt, who sold for $75 his rights for the New England states, the purchaser demanding the return of his money on the ground that the machine was unsalable. The model on exhibition is a reproduction of the original, which was burned in 1836. Though a cumbersome structure it worked fairly well, and failed only because the world was not yet ready for such an invention. There are others of later and slightly improved design, including the first one of the Remington pattern, manufactured in 1874, and thence proceeding through various gradations up to the type-writer of to-day.

MUSHROOMS

Of sewing machines there are more than a hundred models, including the originals of the Greenough machine of 1842, and the Howe machine of 1846, the latter with an antiquated fly-wheel and long-toothed plate on which the cloth was held, the latter feature being partially reproduced in the most recent of all the models, one used for sewing on looped fabrics a woven lining. From the earliest machines to those of recent make are displayed the gradual improvements in each, the latter for all the processes known to the seamstress' art. Among the spinning machines are models of the ancient distaff and spindle, of the spinning wheel of colonial days, of the spinning-jenny that Hargreaves fashioned, and the water-frame that Arkwright invented, thence traced in unbroken series to the self-acting machinery which gluts the market with an over-production of textile fabrics. And so with the looms, the most powerful of modern apparatus standing side by side in contrast with those which wove the wefts of ancient Egypt and of Rome.

PONY EXPRESS

POSTAL CAR

CARRYING THE MAIL

Of agricultural implements there is a complete and varied display, beginning with such as the Assyrians used, and including the most primitive of ploughs, shaped like a crooked stick. Here also is the first fashioned with cast-iron board, invented in 1797, but finding little favor with agriculturists, who believed it would poison the soil and kill their crops. Among those of recent make is a sulky gang-plough of the *fin de siecle* pattern, with numberless levers and springs, for which a patent was issued in 1892. Reapers, mowers, and harrows, seeders and planters, there are in abundance, with the first of what may be termed modern reapers, invented in 1799, one of 1825, and the prototype of the present McCormick reaper, manufactured in 1831.

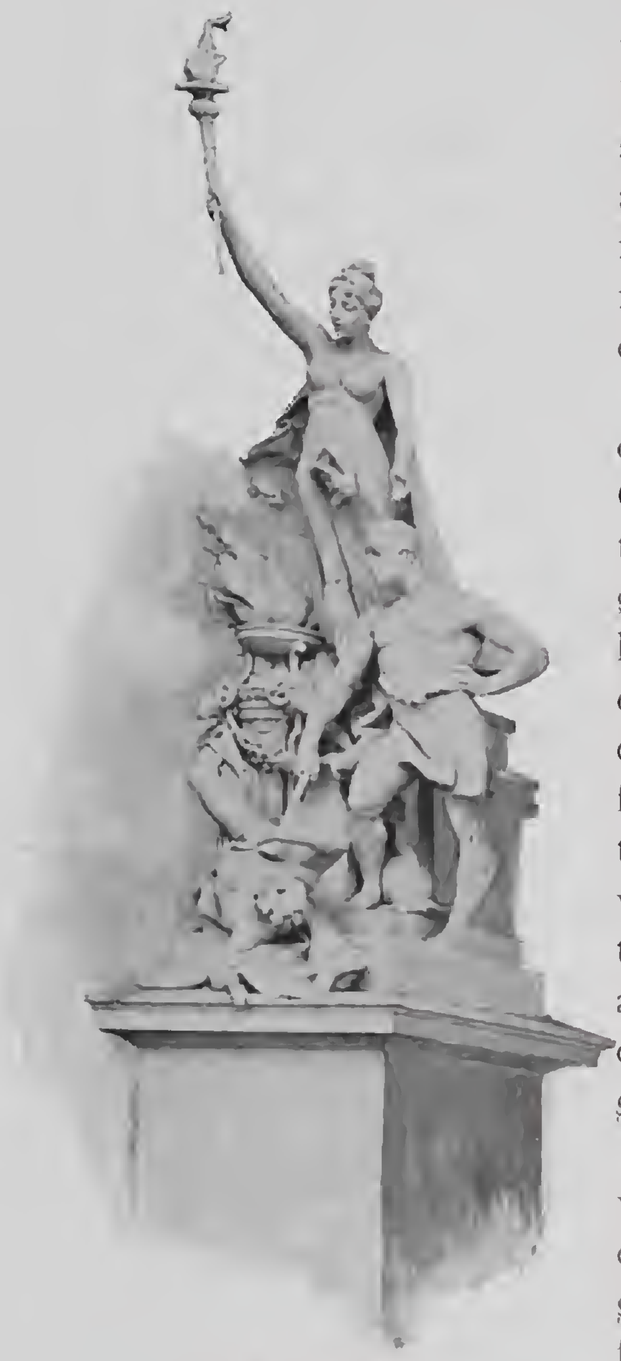
Of steam engines there are more than two hundred varieties, and of engines for propulsion on river, ocean, and lake, nearly three hundred. Among the former is a model of Hero's globe, said to have been turned by steam more than two thousand years ago, with those of the engines invented by Papin and Savery, Newcomen and Watt, of the locomotives built by Trevethick and Stevenson, with others that have become historic, down to the Ericsson models and the cylinders and drivers of the steam leviathan constructed by Vanclair in 1891. Of electric motors the first is that of Joseph Henry, invented in 1835, and near it the original model of Faraday's induction coil, which furnished the keynote to further progress in electricity. A feature of the group is Davenport's motor of 1837, which failed only because there were as yet no dynamos for the production of electric currents. Side by side with Page's motor, used in 1854 on a locomotive running between Washington and Baltimore, are the inventions of Morse, Houston, Edison, and others known to the world of science. Telegraphs and telephones, electric lamps, and other of the manifold uses to which electricity is applied are exhibited in all varieties.

MACHINERY ADMINISTRATION MINES AND MINING ELECTRICITY MANUFACTURES

War is represented as a science by several hundred models of ordnance and other fire-arms. There are cannon of many patterns, from the wooden tubes of the Chinese to rapid-firing Hotchkiss guns, with the Dahlgren gun which, three decades ago, was among the most destructive of war's enginery. In the display of small-arms are models of the first invented, including a pyrotechnic hand weapon and the hand culverin of the middle ages, fired by a slow match. Next to them is a match-lock of the Columbian era and a wheel-lock of sixteenth century pattern, with curiously lacquered barrel, the wheel resting on a spiral spring, wound up with a key, and at the touch of the trigger revolving so rapidly as to emit a shower of sparks from a flint in contact with its circumference. This weapon was used by the Germans in 1555. Near it is the needle-gun which figured so prominently in the war of 1870. There are breech-loaders, muzzle-loaders, and hammerless fowling-pieces, with the original Henry rifle, on which all other magazine rifles are largely improvements, and there is the first Colt's revolver for which a patent was applied. All these and many other specimens are contained in a large glass case, at one end of which is an old-fashioned weapon in the form of a wooden tube covered with bamboo; at the other a Crag-Jorgensen rifle, patented in 1893.

Of other models, as of boot, shoe, and screw-making machines, wood-turning, wood-working, and wood-sawing machines, wire and sheet-metal working machines, fire escapes and ladders, bridges, gates, and fences, threshing machines, knitting and netting machines, and laundry apparatus, of these and many others I need only give passing mention.

Near the north-west corner of the Government building are the quarters of the Geological survey, in the windows of which are photographic transparencies representing objects of historic interest. Under them are topographical and relief maps of every section of the United States, together with a collection of instruments used in the various surveys. Elsewhere are models in plaster of Paris representing the entire surface of the earth and the waters beneath the earth, with their underlying strata, to the greatest depths at which soundings have been taken. Of special value are those which present to us, as the result of many years of study and research, the geographical features of our own country. Here are reproduced in miniature its mountains and valleys, its lakes and rivers, its deserts and swamps, its cities and towns, and even its railroads, all with a minuteness and perfection of detail such as could never be embodied in mere verbal or graphic delineation.



FIRE CONTROLLED

In the geological and mineral groups are no less clearly revealed the strata of our rock formations, and the secrets that for unnumbered æons lay buried within. Of metals, minerals, crystals, and precious stones of commercial or scientific value, there is one of the most complete collections extant, with fossils and the flora of geology, especially its coal flora, depicting more plainly than on written page the legend of the rocks. There are sections of turquoise, several pounds in weight, extracted from the mines of New Mexico; there are garnets of phenomenal dimensions in crystalline form; there are crystals that cannot be readily detected from diamonds, taken from the clay strata of Herkimer county, New York, and there is a large and varied assortment of crystals of the calcite, cryolite, and other varieties. Of specimens and formations not included in the display there are illustrations in the form of paintings, maps and photographs, and as a further supplement to the exhibits are those of the National museum, devoted mainly to physical geology.

WATER UNCONTROLLED

In the various exhibits is represented the entire work of the survey, whether in the field or in the office, elucidating by carefully selected specimens the geology and mineralogy of the United States. The fossil collections are so arranged as to show their original locations and their order in the geological column. Prominent among them is the huge skeleton of an antediluvian pachyderm, fourteen feet long and eleven in height, unearthed in what are known as the bad lands of Dakota. Elsewhere is a fossil horn more than four feet in length taken from a mollusk of the ammonite family, with other ammonite and trilobite specimens, entire or in parts. There is also a large group of the coral-building crustacea commonly known as stone lilies, so called on account of their close resemblance to water lilies.

By the bureau of Indian affairs, as a branch of the Interior department, a building was erected near the Krupp pavillion and the convent of La Rabida, reproducing, as far as possible, the reservation boarding-school, the walls of its chambers decorated with articles of Indian manufacture, and the windows partly composed of transparencies depicturing Indian customs and modes of life, with collections of photographs for similar purposes and portraits of prominent chieftains. There are workshops, school, sitting and dining rooms, dormitories, and kitchen, with apartments for employés, and here may be seen, under charge of instructors, boys and girls, studying or reciting, working at trades, or preparing their meals, all as though actually living on reservations, with specimens of their self-taught industries compared with those of civilized nations, and with the methods adopted and the results accomplished. The pupils and teachers were selected from a large number of Indian schools, not only government schools, but such as are conducted by the several religious denominations, each furnishing its quota, and giving place to others after a brief sojourn. Thus are extended to a large number of Indian boys and girls the educational advantages of the Fair, and to visitors a complete exposition of the training afforded by government and other agencies at widely scattered points.

Finally should be mentioned in connection with the department of the Interior, its Alaskan exhibit, housed in the northern gallery of the Government building, one fully illustrating the resources of that much abused territory, and more than justifying the well-known remark that Seward made, some few years after its purchase. "What, Mr Seward," asked one of his admirers, "do you consider the crowning act of your political career?" "The purchase of Alaska," he replied, "but it will take the people a generation to find it out." And now that a generation has well-nigh passed away, the people are beginning to realize her natural wealth, not only in land and pelagic peltry, but in fisheries, forests, and mines, the first making good the decreasing output of the Columbia river canneries, the second with timber of many varieties and in unlimited supply, the third containing, in addition to valuable placers, gold-bearing quartz-veins, which may yet go far to reëstablish the equilibrium in the value of the precious metals.

For more than a year G. T. Emmons, as special agent, was engaged in preparing this display, and as the result has presented a most attractive and interesting collection, including many curiosities never before given to the public. Among them is a war canoe, grotesquely painted, the sleds of the Thlinkeet and other tribes, their trophies and totem poles, and there is the most complete assortment of furs ever placed on exhibition. In the Thlinkeet, or as the government spells the word, Tlingit collection, are exhibits of rare interest to the casual visitor no less than to the ethnologist. In one case is the most complete assortment of furs ever placed on exposition; in another a collection of festival and ceremonial pipes; in a third of head-dresses, robes, and blankets; in a fourth of weapons and household and fishing implements; in a fifth, of charms and ornaments. Adjoining them are cases containing the household and fishing implements and clothing of the Eskimos. As specimens of Alaskan timber, there are sections of spruce, cedar, alder, and hemlock. The mineral group includes a piece of quartz from the Treadwell gold mine on Douglas island, with gilded bars representing in fac-simile its output of $676,226 for 1892. Finally, there are studies of Alaska in graphic art, in a collection loaned by T. J. Richardson.

SEAL OF LAND OFFICE

In the main gallery are displayed, as may be read on its canvas signs, the resources, industries, commerce, and customs of Mexico, Central and South America, and the West Indies. Here is the picture gallery of the Federal pavilion, where may be studied, in a series of excellent illustrations, the more striking physical features, the farms and factories, the traffic and means of communication, the cities, homes, and home-life of many nations, with portraits of their more eminent men. In cases containing textile and other fabrics are copies of a work entitled the *Special Exposition Bulletin*, issued by the bureau of American republics, and, as it states, showing how Latin American markets may be reached by manufacturers. Among other curiosities are fac-similes of the Peruvian, Bolivian, and Argentinian declarations of independence and a collection of paintings in water color by an Amayara Indian of Bolivia. Elsewhere are llamas, guanacos, and burros, the last in a mounted group, side by side with a pack-mule and a yoke of oxen. A relief map of Central and South America shows the proposed line of an Intercontinental railroad and of existing railway and steamship lines, with a vertical scale of about one inch to the mile and a horizontal scale of an inch to twenty-five miles, measured on the equator.

Descending from the gallery, whence we found an excellent view of the departments below, and especially of the rotunda, with its mural decorations, let us enter the Fisheries branch, for which, with the aid of an appropriation of $89,000, preparations were begun in the spring of 1891. Collections were placed in a building rented by the Fish commission in Washington, and a corps of assistants was employed in preparing the exhibits for packing. In December 1892 eight car-loads were housed in the federal building, and before the middle of March twelve additional car-loads were landed in Chicago. In the closing days of the latter month the work of installation was begun, and by the first of May completed. As the result we have a most interesting and instructive display, occupying 15,000 square feet in the northern corridor and the naves adjacent, between the spaces allotted to the departments of the Interior and of Agriculture.

Says the manager of the Fisheries department: "The object of our exhibits is to illustrate the functions, methods, and operations of the United States fish commission in its three divisions of scientific inquiry, fisheries, and pisciculture." The collections are largely drawn from the fisheries section of the national museum, where most of them were deposited by the commission, after doing duty at former expositions; but much of the material is the property of the museum itself.

As illustrations of the scientific work of the commission, there are models and photographs of its aërological stations for marine exploration and of its vessels, the *Albatross*, *Fish Hawk*, and *Grampus*. Together with apparatus for deep-sea soundings and thermometers and salimometers for physical observations are sectional charts of ocean's bed, relief models of submarine continental slopes, and specimens, dried or in alcohol, of mollusks, polypi, and other denizens of surface and deep waters, including corals and foraminifera, crinoidea, star-fish, and sea-urchins, the last of which is classed as an edible specimen, though one would prefer to have fresh on table the lobsters, crabs, shrimps, or oysters that form a part of the collection. Of seines, trawls, towing-nets, dredges, sieves, and other such articles as were used in making and preserving this collection, there is also a plentiful display. Nor should we omit the groups which show the development of pisciculture as a branch of economic science.

The division of fisheries is subdivided into objects or groups of specimens, apparatus, illustrations, and statistics. In the first are included, among other mammals, the common and bottle-nosed dolphin, the grampus, porpoise, and sperm-whale, the common and fur-seal, and the sea-lion, the last three mounted on frames and the others in the form of casts. Of reptilia and batrachians there are the alligator, or rather his skin; turtles, green, soft-shelled, snap, and spotted; tortoises of several descriptions, and snakes and frogs, some in the form of painted casts and others represented by their shells. But most of the fish exhibit proper is to be found in the annex of the Fisheries building, the living specimens in its aquaria and others in various forms of illustration. Of these a description will be given in connection with the Fisheries department.

UNITED STATES MINT EXHIBIT

Under the heading of apparatus are classed fishing vessels of all descriptions, from a steam-whaler to a skin or bark canoe. Of the smaller craft there are many actual reproductions, and of the larger, models and pictures, with improved and recent types, their instruments of navigation, their rigging and equipments. For the taking of fish there are casting and towing nets, trawls and dredges, the lines, rods, reels, flies, floats, and sinkers of the angler and the deep-sea fisherman; and the spears and lances, or missile weapons used in whaling and sealing, or by Indian tribes, as the Aleuts and Eskimos for supplying themselves with food. Among the collection of rods is one valued at $2,000, manufactured by the New York firm of Abbey & Imbrie for the Queen's Jubilee Exposition, as a specimen of the most finished workmanship. It is mounted in gold, engraved with designs of artistic merit, in its butt a topaz which cost $1,200, and its reel of solid gold, with handle of agate.

In addition to the models, casts and pictures already mentioned, the Fisheries department is further illustrated by a collection of many hundreds of color-sketches, paintings, and enlarged photographs, representing

MODEL IN GOVERNMENT DEPARTMENT

not only classes and specimens, but the dwellings of fishermen, their mode of life, and the villages and towns supported mainly by this industry. Statistics are presented in the form of charts and in the publications of the Fish commission, beginning with its organization in 1871. Those who incline to this class of literature will find here no lack of material; for in one of the cases are some twenty volumes of *Annual Report*, each of nearly 1,000 pages, ten volumes of its *Annual Bulletin*, with 5,000 pages in all, the quarto series in connection with the tenth census, and special treatises and reports on scientific investigation and research.

As an example of what has been accomplished in the way of pisciculture, it will be seen on one of the charts in this section that, between 1872 and 1892, the commission distributed 2,732,486,387 fish. Of the economic value of its work a single instance must here suffice. In 1880 some 29,000,000 shad were distributed among the inland waters of the United States and more than 5,000,000 were caught, while for 1890 the take was little short of 15,000,000; yet for the former year the catch was valued at nearly $1,000,000 and for the latter at about $800,000, showing a decrease of 69 per cent in price in relation to volume of production, and with an actual reduction of 40 per cent in retail markets, thus bringing this favorite food-fish within reach of the most slender purse.

GROUP ON ADMINISTRATION BUILDING

Among the exhibits are all the apparatus for collecting, preserving, and hatching ova, and for the preservation of fish in various stages of growth, including such as are or have been used, not only by the commission, but at other piscicultural stations in our own and foreign lands, thus affording a practical illustration of the science from its very inception. Of hatching houses there are many models, with pictures on a scale representing their structural design, their methods and appliances, together with floating stations in actual operation. In a word, fish propagation may here be studied, whether from a commercial or scientific point of view, extending over the entire region between Maine and Oregon, and thence southward to the state of Missouri.

Methods and results are further illustrated by figures in clay, showing the mode of capturing shad and cod, and by a chart the system of collecting their eggs. The growth of fish reared by the commission, as the trout, white-fish, carp, tench, gold-fish, bass, and many others, is indicated by painted casts. In another group are ova in various stages of development, with specimens, preserved in brine and alcohol, from the smallest of fry to the full-grown fish. In still another are models and photographs of water-ways, showing how fish are assisted in passing the obstructions of river and stream, with other appliances for their protection.

As with the Fisheries, so with the Agricultural department of the government display, it is intended to illustrate the functions, scope, and methods, with the results achieved in each of its subdivisions. While largely of a scientific and educational character, as are most of the government exhibits, it is not entirely so, and few there are among the more intelligent class of observers who fail to recognize its attractive and artistic features.

Entering from the central rotunda our national hall of agriculture, veiled by a screen of symbolic and most tasteful design, the visitor finds abundant evidence that the $150,000 and 23,000 feet of space appropriated for its purposes have been utilized to good advantage. Under the personal supervision of Edward Willits, assistant secretary of his department at Washington and chairman of the government board of control, there have been gathered and installed probably the most complete and yet the most compact collections ever brought together. An agricultural display like that of the main Agricultural department of the Fair, it was not intended to be. Nevertheless there are choice exhibits of cereals, cotton, tobacco, and wool, procured by agents specially appointed for their task, mainly with a view to illustrate the effect of soil and climate on the several products on view. Samples of wheat, barley, oats, rye, corn, and buckwheat, culled from every section of the United States, are accompanied with sufficient data to afford a comparison of each variety and to indicate the most suitable habitat for each. Of cotton there are numerous specimens, carefully chosen and skilfully arranged, showing how this industry has been and yet may be improved. Tobacco is shown in every form and variety in which it is raised, and among other exhibits is one in bulk, as removed from the hogshead which contained it. Samples of wool, including many foreign descriptions, are

NATURAL HISTORY GROUP

STRENGTH, ADMINISTRATION BUILDING

placed in large glass jars, and beside them are fleeces in pyramidal form. Thus the wool-grower or wool-merchant may compare the relative merits of nearly all merchantable classes and grades.

The bureau of Animal Industry has furnished an excellent display, happily combining the scientific with the popular. Sides of beef and an entire hog in papier maché illustrate the process of dressing and preparing for market. The spread of pleuro-pneumonia, the world over, is traced on a globe, where its progress is indicated before and after it reached our shores. The method of inspecting pork to detect the presence of trichina is shown by men detailed for that purpose. Of pathological specimens in alcohol there is a large collection, and the diseases of domestic animals may be studied in the form of models, together with such of the bacteria as are destructive to brute and human life. In other models are displayed some of the most recent patterns of cattle cars and vessels, constructed with due consideration for the care of live-stock in transit. There are also horse-shoes on exhibition, showing approved and faulty methods of shoeing and the manner in which are shod the champions of the turf.

In another section of the Agricultural department are exhibits of practical chemistry, with a working laboratory showing the most recent appliances for the analysis of food constituents, for detecting adulterations, and other useful purposes. The cultivation of sugar-beets and the manufacture of beet-sugar are features of interest, and the machinery and apparatus used in this connection are models of their kind.

CARAVELS AT THE FAIR

In the Botanical division is a herbarium case, where are mounted and labeled specimens of most of the plants indigenous to the United States, and in bottles a large collection of medicinal plants. There is also a comparative display of grasses, whether serving for food or for manufacturing purposes, and out-door groups of such plants as are found in the desert regions of the south-western states. In this connection may be mentioned the Entomological collection in which are included injurious species of insects, insect-destroying substances and apparatus, systematic and biological classes, appliances and methods for collecting and rearing insects, and illustrations and maps. By models are illustrated the depredations wrought by insects on various species of plants, and that with such fidelity of detail that the spectator might suppose himself looking on the plant itself. In a heap of corn are shown the ravages of the boll-worm and other pests, in the potato, tomato, tobacco, and other plants those of the insects called by their name. Finally there is a choice exhibit of mounted specimens, including South American varieties, their brilliant colors blended in most artistic fashion.

Of fruit there is a large collection in the shape of wax models, and here is an excellent opportunity for the comparison of different species and specimens, such as are adapted to the various fruit-growing regions of the United States. Side by side with these groups are several hundred kinds of nuts, indigenous, transplanted, and foreign, from the Florida cocoa-nut to the almond and Persian walnut—more commonly termed the English walnut—of California. In the so-called division of Microscopy is a large collection of edible and poisonous fungi, with mushrooms displayed in life-like colorings. Here are illustrated the operations of the administrative department in connection with experiment stations, the workings of the stations themselves being displayed in the main Agricultural department of the Fair, and described in that connection.

In the Forestry section are the tops of the long-leafed or southern pitch-pine, with its trunks and seedlings in various stages of growth, and with its several products, including all grades of crude and refined turpentine and rosins, the specimens arranged in columnar form representing a section of the tree. Suspended from the trees are the various tools employed in this industry. There are also native and foreign finishing woods in a pagoda containing columns of such woods, handsomely carved and veneered, and there is a large octagonal column filled with seeds from the various trees indigenous to the United States, around its broad and terraced base a group of living conifers. Another attractive feature is a series of monographs, framed with sections cut from the trunks of various species, and illustrated by means of botanical specimens, with maps and photomicrographs showing geographical distribution. In the form of screens are more than two hundred specimens of botanic forest growth, in conjunction with as many sections of the trees among which they are found, and also with charts of distribution and annotations of interest.

In the herbarium is a complete collection, including more than 200 specimens, of the leaves and timber of all trees of commercial value indigenous to the United States. An instructive exhibit is in the form of large square cases, their framework of elm, birch, cherry, maple, oak, spruce, ash, cypress, walnut, and hickory, and inclosing polished panels, fashioned of native varieties. A small pavilion is set apart for railroad ties, of wood and metal, the Central Pacific sending one of red fir and the Southern Pacific one of black redwood, to show how they have been preserved in serviceable condition after the hard usage of a quarter of a century. But perhaps the most unique exhibit of all, and one that is specially appropriate to this year of Columbian celebrations, is a disk of highly polished wood containing a series of rings which reveal, as clearly as on written page, that, in the Columbian era, the tree of which it is a section must have been a seedling, all unconscious of the great future which lay before it. On each series, indicating a decade's growth, are described the leading historic events of the corresponding period.

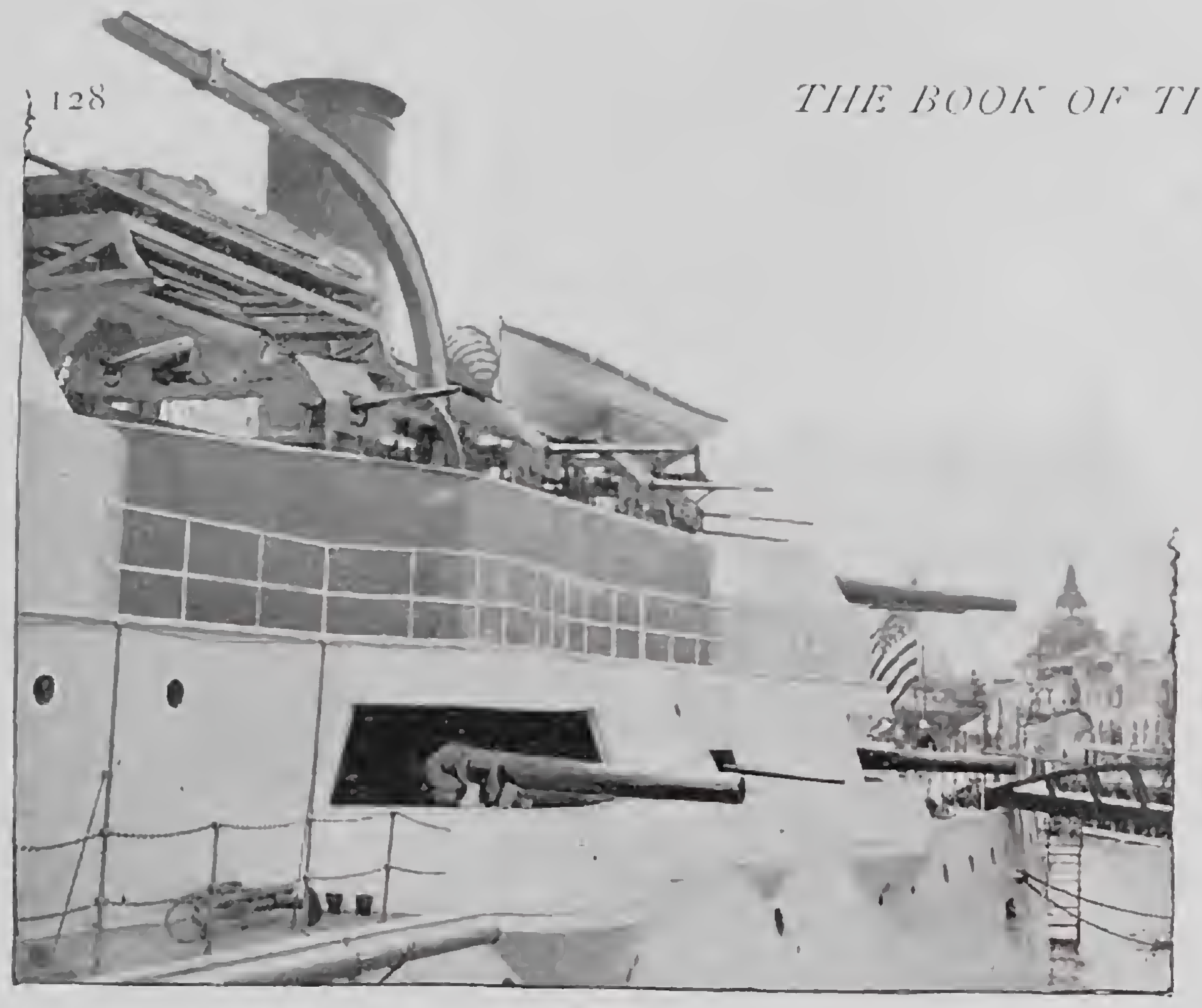
Still another interesting exhibit among the Forestry groups is a model of a recently invented machine for the planting of trees, whereby as many as 35,000 cuttings have been planted on unbroken prairie-land in a single day. The timber tests conducted by the Forestry department are also shown, with the methods of applying strains. In the corner occupied by the office of fibre investigations are arranged in boxes sisal and other hemps, flax, jute, ramie, and the fibres of the pine-apple. Among the exhibits of hemp are twines and cordage, and among those of flax, the straw in its natural state, as well as dressed and manufactured, with a spinning-wheel more than a century old. Finally in the section of vegetable pathology are illustrated in models or actual specimens, such fungous diseases as the pear blight, and the mildew of the grape, with materials and methods for their extermination.

In the division of ornithology and mammalogy are shown the economic relations of birds and mammals to agriculture, with their geographic distribution. Here, for the first time, are displayed the collections gathered in the Death valley expedition of 1891, under the direction of this bureau. The groups are skilfully mounted and arranged, and among them is one representing the fauna and flora of a mountain slope, as seen by him who climbs the mountain's side.

For those whose tastes incline to this class of literature there is a complete collection of the publications of the Agricultural department, with statistical chart and maps relating to all the agricultural products of the United States, including their distribution and their prices for a series of years.

Of the Naval exhibit some description may here be added to the slight mention already made of this interesting feature. In the model *Illinois*, whereby this department is represented, we have somewhat of a novelty in naval architecture—a vessel of war whose hull, from berth to main deck, is of brick and concrete, covered with a coating of cement, and resting on a foundation of piles. The ship is armed, manned, and equipped, and there are quarters and mess-rooms for officers and men, with drill and dress parade, all in such realistic fashion that, by the uninitiated, the vessel might easily be mistaken for an iron-clad moored alongside the wharf in front of the government plaza.

The *Illinois* is a model of our coast-line battle-ships of the latest pattern, such vessels as the *Oregon* and *Massachusetts*. She is 350 feet in length, with a beam of 70 feet, and were she an actual man-of-war, would be of about 10,000 tons, with engines of 9,000 horse-power and a speed of some 18 knots an hour. Her full complement of officers and men would be about 450, those now on board belonging to the marine corps and the war-ship Michigan. As to her armament, there are first of all, on the main deck, fore and aft armor-plated turrets, with thirteen-inch breech-loading guns, almost as harmless as those which the Chinese used in the fifteenth century, and made, like theirs, of wood, wrapped and covered with cement. Pointing fore and aft are six-inch breech-loading rifles, mounted in sponsons projecting above water line. On the excursion deck the batteries consist of eight-inch also mounted in turrets. The armament includes, besides, Gatling and other rapid-firing guns, in all some fifty pieces of ordnance, large and small, and with six torpedo tubes. The lighter cannon are of real workmanship, and were forwarded from the naval gun factory with carriages and equipments as though for actual service. From the forward section of the upper deck rises a hollow iron tower, or as it is termed, a military mast, around which, at the forward end of the bridge, is the chart house, and above it platforms, or tops, for sharpshooters and quick-firing guns. Above the tower is a flagstaff for signalling purposes. In the conning tower, where is the commander's station in time of action, are electric and other appliances, as call-bells and speaking-tubes such as are needed for handling a ship to the best advantage. On either side of the bridge are hung the boats, eleven in number, with two steam launches, all of which are real and serviceable



NAVAL EXHIBIT

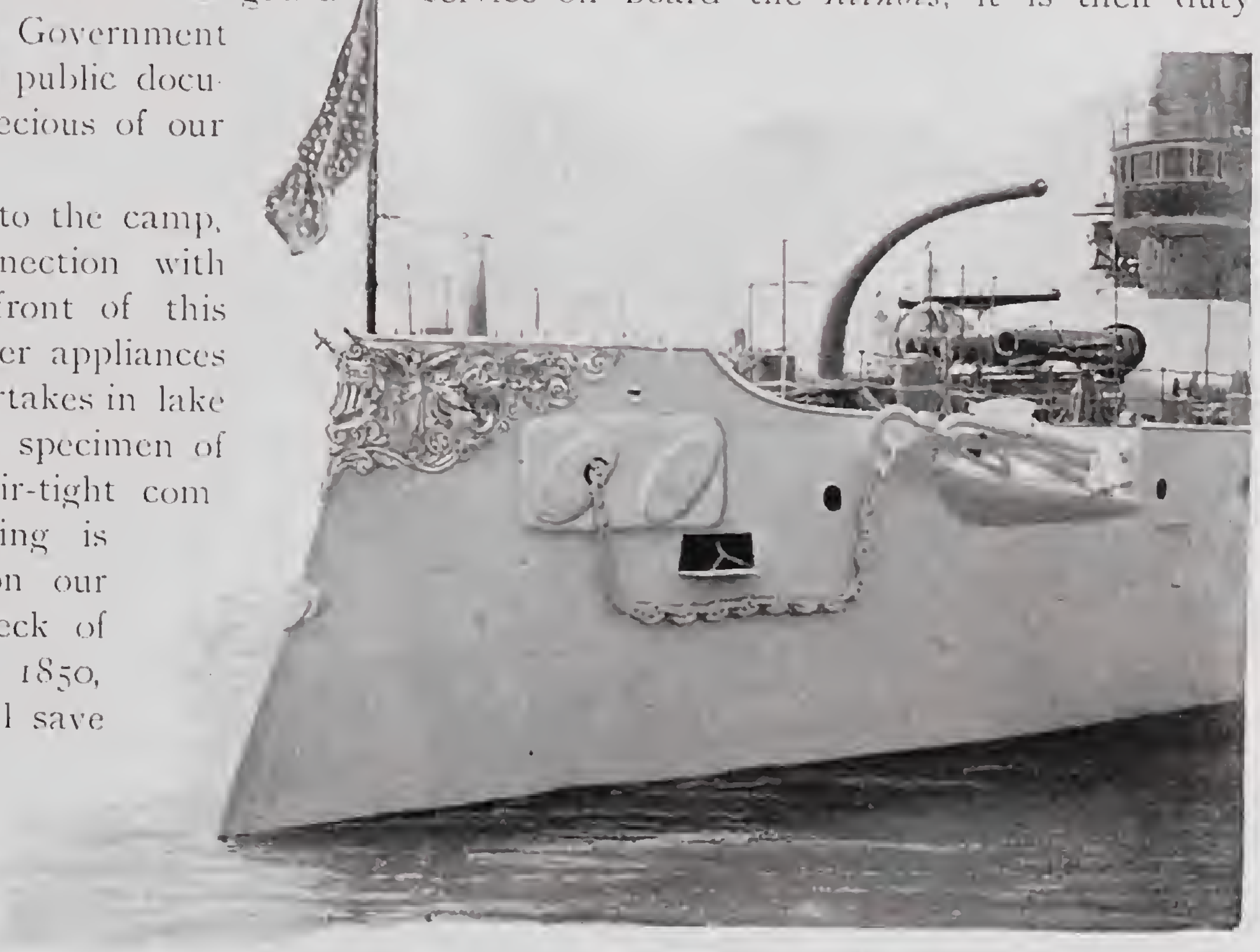
craft. The starboard side is protected by a torpedo netting of spars, which at times is displayed in actual operation, as also are the several uses of electric lights for naval purposes.

But for a view of the most interesting exhibits on board the *Illinois* we must descend to her lower deck, where, between the sailors' and officers' quarters in the fore and aft compartments, a large space is devoted to a hydrographic display, illustrating the process of marine surveying and deep sea soundings, to that of the naval academy, to the departments of the surgeon-general and paymaster, and to a collection of such engines, apparatus, and tools as are commonly used on board our vessels of war. Beneath the forward turret is the magazine, from which ammunition is hoisted by hydraulic power, and almost under the vessel's bow is a railed inclosure where those who are curious as to such processes may watch at leisure the loading of torpedoes. On this deck also are the mess-rooms, the store-rooms, and the cook's galley, men and officers living as though on actual service and under similar discipline. Finally there are portraits of naval heroes, from the days of Paul Jones to those of Admiral Porter, and there are models of war-vessels of all ages and descriptions, from the war-canoe of the savage and the trireme of the Greek to the wooden three-deckers that fought at Trafalgar and the steel-clad cruisers of our own white squadron.

The builder of the *Illinois* was the naval architect, F. W. Grogan, and to Commodore R. W. Meade of the navy department is due the project of a naval exhibit. On the decks of this model is an opportunity for the visitor who dwells remote from seaport towns to study the organism of the navy now in course of construction, and intended to give to the United States her proper rank among the maritime powers of the world. As yet we have merely the nucleus of a navy, and that consisting almost entirely of the iron and steel-plated cruisers, coast-defense, and line-of-battle ships constructed within recent years; for, in the relics of the civil war—a few small armored vessels and antiquated specimens of naval architecture—we had nothing on which to rely in case of need. To no purpose could the treasury surplus have been better applied than in providing such means of protection for our commerce and our coasts, and few there are who will grudge the expense of adding to our navy, though at an average cost of some $3,000,000 each, at least two or three vessels a year, such as those represented by the *Illinois*. Doubtless the ship of which she is a model would, on occasion, render a good account of herself; but as yet there is not in the entire fleet a single man-of-war that would be a match for the first-class ironclads of England, Italy, or France.

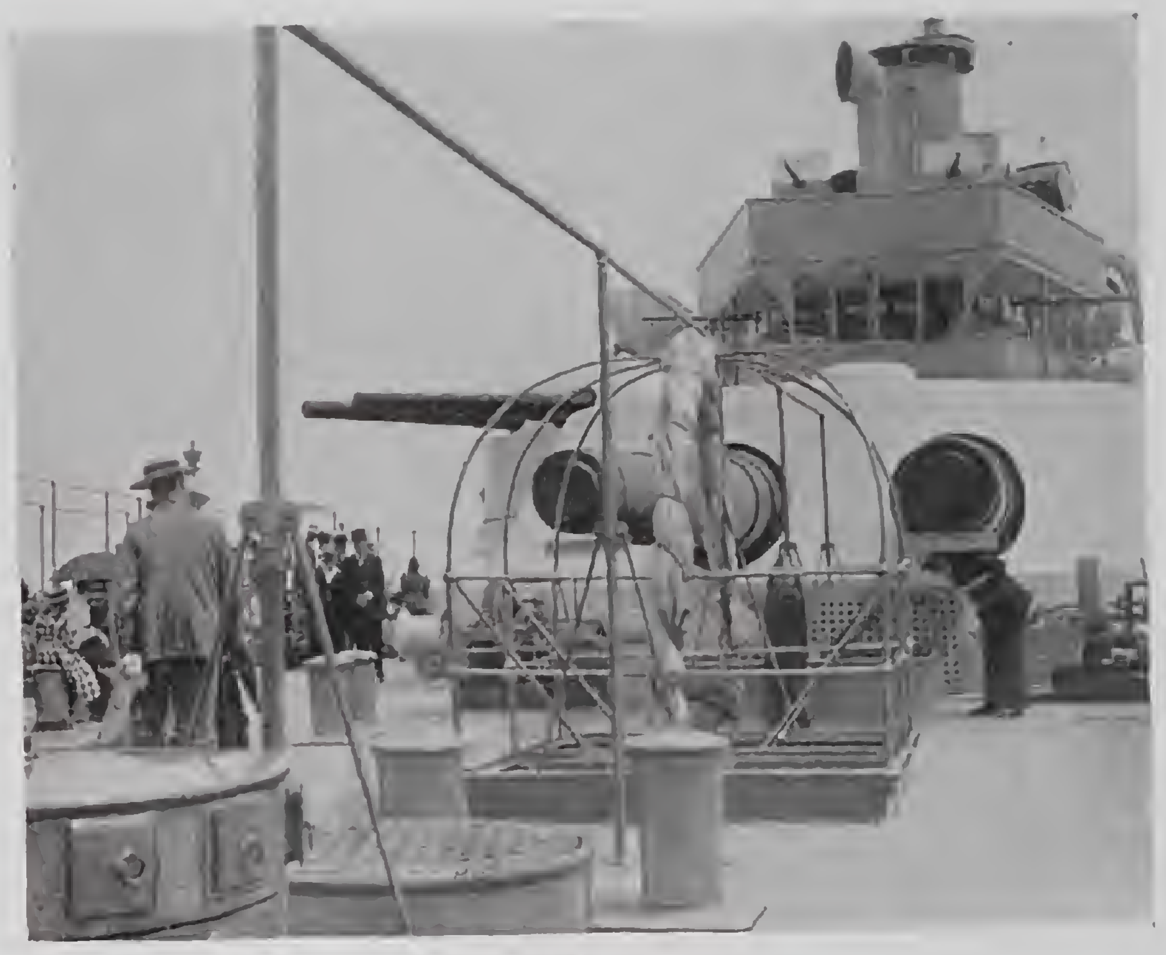
A short distance inland from the wharf where lies the *Illinois* is the camp of the marine corps, whose location is revealed by the letters U. S. M. C. worked in botanic device on the strip of lawn in front of its neat and orderly array of tents. In addition to guard service on board the *Illinois*, it is their duty to protect certain of the exhibits in the Government building, and especially the more valuable public documents, some of them among the most precious of our national heirlooms.

Of the life-saving station, adjacent to the camp, brief mention has been made in connection with Exposition management. Within or in front of this two-story structure are life-boats and other appliances for the rescue of those whom accident overtakes in lake or waterway. Among them is a beautiful specimen of such craft, built of mahogany and in air-tight compartments. To one side of the building is attached the first life car ever used on our Atlantic seaboard, whereby, from the wreck of the *Ayrshire* on the New Jersey coast, in 1850, were rescued her crew and passengers, all save one, who, fearing to wait his turn, clung to the outside of the car and was washed away. Here also are the mortar and cannon-ball used to cast on board the life-line, the latter found, a quarter of



PROW OF THE "ILLINOIS"

a century later, in the hold of the vessel. Both have become historic and form a part of the collection loaned by the Smithsonian institution, where is their home. The life-saving station is one of the Fair buildings, small though it be, that is intended for permanent use. Near it is a lighthouse of modern design, with framework of steel and about 100 feet in height. Its revolving light is of the first magnitude and with the most powerful of reflectors. After the close of the Fair it was to be taken apart in sections and shipped to the mouth of the Columbia river, a point more dreaded by mariners than any other on the Pacific coast. Next to the lighthouse, on the government esplanade, are the three small wooden buildings in which is contained the naval observatory, with its equatorial and transit telescopes, and an interesting collection of chronometers that have seen hard service in Arctic and other lands. Of such as are of historic interest mention is made under the heading of World's Fair Miscellany. Here, under the direction of F. T. Gardner, a time-ball is made to drop from the flag-staff of the Federal building precisely at noon by Washington time, or at about eleven o'clock as time is in Chicago.


GUN DECK "ILLINOIS"

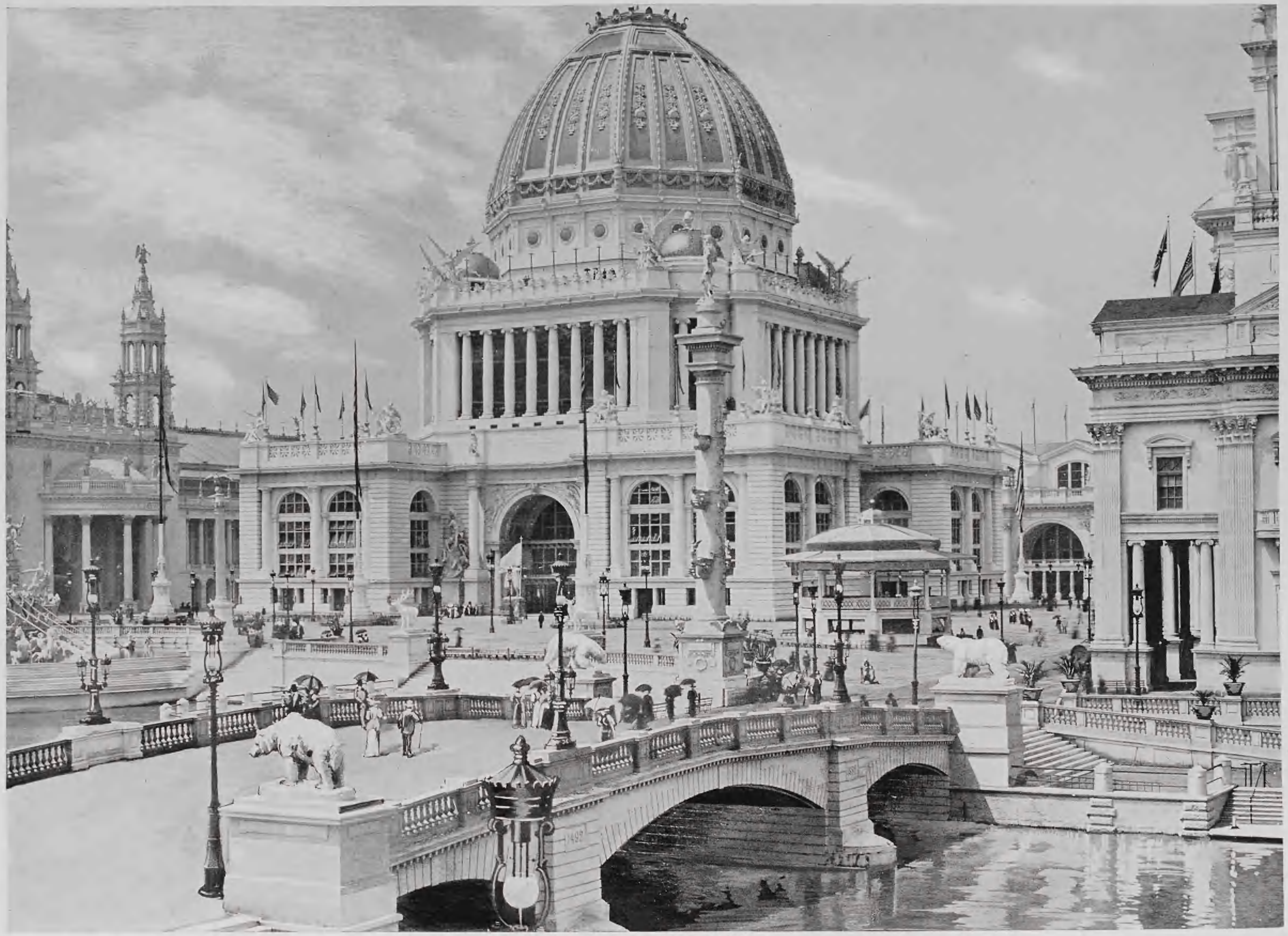
To this group of minor departments belongs also the Weather bureau, classed under the agricultural section of the government exhibits. Thoroughly equipped and with the most approved and recent of meteorological instruments, it is almost a reproduction of the system in use at the national capital. From cipher telegrams, announcing weather conditions throughout the United States and Canada, forecasts are made by the officers precisely as in Washington. In the upper story of this neat and unpretentious building, short lectures are delivered on meteorology, illustrated by a stereopticon, and here may be had lithographic weather maps prepared each day from the current reports, on the back of which are described the elementary processes in the science of weather forecasting. On the roof is a shelter-house containing the thermometers, the apparatus for recording rainfall and sunshine, and the flag-staffs for the display of wind and weather signals.

From the national administration let us turn to the administration of the Fair, though in the latter department there are no exhibits, properly so-called, except for the building itself, which has justly been termed "the crown of the Exposition palaces." When, by a member of a foreign legation, the remark was made, already quoted in these pages, that "the Chicago buildings are what we expected to see in Paris, and those of the Paris Exhibition what we should have expected to see in Chicago," his meaning was probably somewhat as follows. In Paris, the home of art, the architects of the last of her great World's Fairs gave little more than commonplace effects, with an eye rather to convenience than structural beauty, while Chicago, the acknowledged type of industrial progress, but where as her rivals said, art found no abiding place, has far outstripped the Parisian display in artistic and scenic design. From the latter was expected, at least by foreign visitors, merely the colossal and utilitarian style of treatment developed by the exigencies of modern exhibitions; there was found instead the most refined and harmonious of decorative forms, evolved on such a scale and with such skill and taste as in its entirety has never before been witnessed in Exposition architecture.

While in the five great structures that surround the main court we have the most striking of all the architectural effects, nowhere do we find among them more perfect elaboration and harmony of composition than in the Administration building. Yet in none of the larger edifices were their structural problems more difficult of solution; for, adjacent as it is with the railroad terminus, here is the principal entrance-way to the grounds, and through its porches, through its spacious and majestic interior, the visitor may pass into the fullness of glory revealed by the city of the Fair.

Covering an area in the form of a square, whose side is 260 feet, the first floor consists in part of four exterior pavilions in the form of

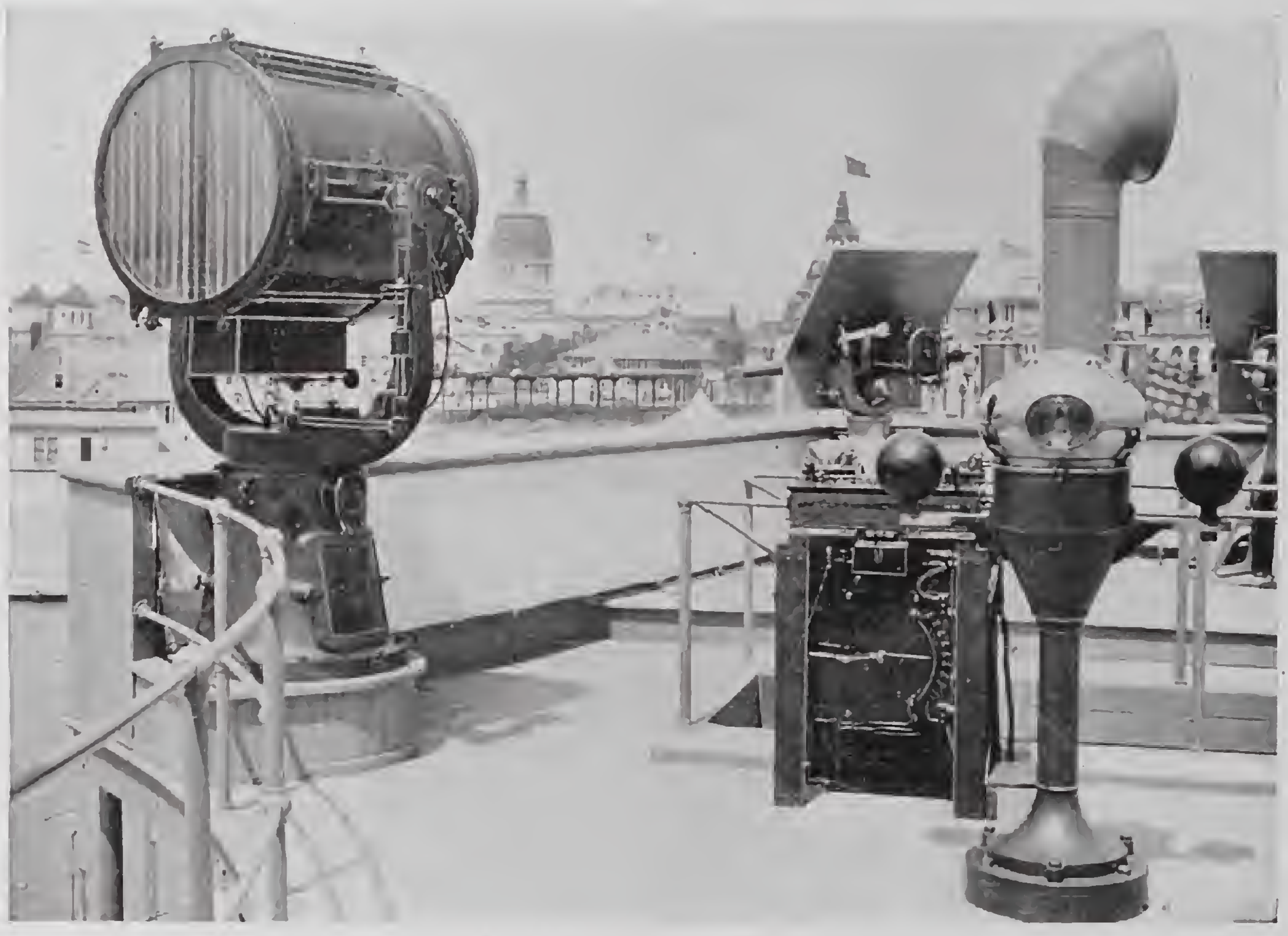
SIGNAL SERVICE STATION



ADMINISTRATION BUILDING, EAST FRONT

wings, of equal size, one at each angle of the square, and in the centre of their façades a wide recess, where are the grand entrances, flanked with emblematic statuary. These are of the Doric order, with flat terraced roofs, surrounded with balustrades, and adorned with statuary at their outer corners. In the interior of the building is a rotunda of octagonal shape, forming the principal motif of the plan, its arched walls surmounted with a frieze nearly thirty feet wide, and covered with sculptures in low relief. Within this hall neither nave nor transept interferes with the unity of the composition, nor is there anything to obstruct the view from the floor to the overhanging dome.

On the second story the octagonal structure rises above the pavilions, standing forth boldly against the sky, and asserting itself as the dominating feature of the design. With a height of some fifty feet, this story is of the Ionic order, and with an open colonnade on each of its faces, the pillars of which are forty feet high and four in diameter. Above the pavilion, and resting on the floor of the gallery in which the story ends, are domes flanked with the heroic statuary in which the artists of the Fair delight. From this floor rises the base of the central dome, which is thence continued in soaring lines to the apex, towering far above the loftiest of the adjacent temples, its gilded surface displaying, for a radius of two-score miles, the location of this monumental vestibule of the Exposition.



SEARCH LIGHT DECK OF "ILLINOIS"

In structure this dome resembles, as I have said, that of the Invalides, but is more than forty feet higher, and more than fifty above that of the national capitol. In diameter it is larger than any that have yet been fashioned, with the single exception of the dome of St Peter's. Within it is an interior dome, nearly 100 feet less in altitude, and at its apex an opening fifty feet wide, through which the vault above appears like the concave arch of another sky. Thus light is admitted to the great rotunda, while its inner ceiling is not so lofty as to impair the architectural effect.

The Administration hall was intrusted to Richard M. Hunt, with whom in former years were associated, as pupils or assistants, several of the Fair artificers. Says one who has made a thorough study of his design, and of the plans on which all the main buildings were formulated: "In his decorative treatment of the problems thus evolved Mr Hunt has exercised a fine spirit of scholarly reserve. The architectural language employed is simple and stately, and the composition as a whole is so free from complications, its structural articulations are so frankly accentuated, that it is easy to read, and, being read, cannot fail to surprise the most unaccustomed mind with a distinct and veritable architectural impression. We have said that this edifice was intended to introduce the visitors to the Exposition into a new world. As they emerge from its east archway and enter the court, they must, if possible, receive a memorable impression of architectural harmony on a vast scale. To this end the forums, basilicas, and baths of the Roman empire, the villas and gardens of the princes of the Italian renaissance, the royal court-yards of the palaces of France and Spain, must yield to the architects, 'in that new world which is the old,' their rich inheritance of ordered

FRESCO, DOME ADMINISTRATION BUILDING

beauty, to make possible the creation of a bright picture of civic splendor such as this great function of modern civilization would seem to require."

MUSIC, TOP OF ADMINISTRATION BUILDING

The decorative features of the Administration building are no less worthy of commendation than is the building itself. Far up on the frescoed walls and between the grand arches of the rotunda, are panels on which are imprinted in gilt letters the names of the principal countries represented at the Exposition. Above the arches and the carved moulding which surmounts them are inscribed on other panels some of the great discoveries and events of the past and present centuries, with the names of prominent discoverers and inventors, on a higher border of moulding, over a row of small latticed windows. Above these are portrayed in plaster medallions the various types of women, among the leading nations of earth. Near the summit of the interior dome are groups of statuary, in each of which the central figure is a woman in the act of crowning with a wreath one to whom honor is due. Over one of these figures are the letters W. C. E., and in front of it, in kneeling posture, the typical exponents of science, industry, literature, and art.

But it is on the outer dome that one of the youngest of the Exposition artists, though a medallist of the Paris Exposition and the American Art Association has given us the gem of the decorative scheme. While the largest of all the decorative paintings of the Fair, so perfect is its execution that, as with the Fair itself, its monumental proportions are veiled by its symmetry of design. Here Apollo sits enthroned, and before him kneels a warrior on whom he is conferring the wreath of victory. Others are ascending the broad stairway of this Olympian dais, and around the entire vault extend in unbroken procession the favored representatives of the peaceful arts. Over a model of the Parthenon, drawn by four winged steeds, female figures are raising the canopy of its amphitheatre.

Of sculpture there are twenty-eight groups in all, with many single figures and bas-reliefs. On the sides of and above the entranceways are those which represent the four elements—earth, air, water, and fire—and at the corner pavilions, such as are typical of patriotism, religion, charity, diligence, and other qualities and tendencies of the human race, with special regard to American characteristics. Flanking the cupolas at the base of the dome are groups allegorical of the highest development attained by man, whether in culture, industry, or commerce, science or art, peace or war. In these are winged

GROUP, ADMINISTRATION BUILDING

STATUE OF THE REPUBLIC

STATUARY ADMINISTRATION BUILDING

female figures, with boys proclaiming in trumpet tones the symbolic language of the theme. Thus is also relieved the severity of the structural design.

As to the several branches of the administration bureau, with their various functions and operations, little remains to be added to that which has already been said in this connection. Here, during the formative period of the Exposition, were the headquarters of its various departments, afterward removed to the rooms set apart for them in the home of the Fair, the post-office, for instance, being now in the Government building, and so with the rest. Nevertheless there are features still remaining that are worthy of passing mention. First of all there is a branch of the bank of the Northern Trust Company of Chicago, for the care of deposits, the purchase and sale of foreign and domestic exchange, and for telegraphic and cable transfers. This was established at the solicitation of President Higinbotham, soon after the suspension of the Exposition branch of the Chemical National bank, on which occasion the entire sum deposited by exhibitors, amounting to some $75,000, was made good by the directors and their associates. "The good name of Chicago," said the president, "cannot afford to be smirched by such a small matter as $75,000. If the sum were ten times that amount, it would be raised by the business men of the city."

On the ground floor of the south-east pavilion are the offices of the Western Union and Postal telegraph companies, and on other floors are, in the order named, those of the Board of Lady Managers, the National Commission and the committee on ceremonies. In the north-east pavilion are the quarters of the custom-house, the secretary of installation, the World's Columbian Exposition, the director-general and the department of awards. A third pavilion, in the south-west corner, is set apart for express companies, for the branch bank and the vaults of its safety deposits, for the department of Foreign Affairs, and the offices of the Columbian guard. The remaining pavilion is largely devoted to the press; and here also are the rooms of the department of Publicity and Promotion, and of the official catalogue and directory. In describing the wonders of the Exposition, some of the ablest pens are busied, representing nearly all our states and territories, with many foreign lands, and forming probably the largest gathering of correspondents ever seen. By the middle of June, Great Britain and her colonies had nearly two-score correspondents on the ground, among them those of the London *Times*, *Morning Post*, *Art Journal*, *Graphic*, *Illustrated London News*, *Pall Mall Gazette* and other metropolitan journals. There were also representatives from minor English cities, from Scotland, Ireland, and Wales, from Canada, Australia, and Hindostan. To Germany fifty members of her press sent home their descriptions from a city whose denizens of German parentage outnumber all other nationalities. France had sixteen correspondents, Austria about as many, and Italy more than twice that number. Other European countries had several men in the field, all save the one whose acquisition of her New World empire the Fair was intended to celebrate, Spain being represented by a single correspondent, that of the Madrid publication, *La Union Catholica*. Add to this the descriptive matter scattered broadcast throughout the world by the department of Publicity and Promotion, and it will be seen that if the Exposition should prove a failure, a financial failure, that is, for an artistic failure it cannot be—it will not be for lack of advertising. No wonder that from an average of some $10,000 or $12,000 for the month of May, the gate receipts increased to more than $50,000 a day before the end of June.

STATUARY, ADMINISTRATION BUILDING

PLOUGHS ANCIENT AND MODERN IN GOVERNMENT BUILDING

World's Fair Miscellany.—The cost of the federal building was about $325,000, or a little more than $2 per square foot of floor area. As the appropriation was $400,000, there remained a balance of $75,000, with which were erected the army hospital, the naval observatory, and the quarters of the weather and Indian bureaus.

At various points around the northern gallery are canoes of various patterns, among them the Alaskan war canoe mentioned in the text, one hollowed from a single trunk, and with figures painted and carved after the grotesque fashion of the Aleuts. From the centre of the gallery rises the top-mast of a vessel, with a look-out on the cross-tree. On one side of it is the bowsprit of a whaler, and on the other the bow of a whale-boat, with men standing ready to cast their harpoons. In the wall of the gallery floor are decorated panels, typical of the industries of the four principal sections of the United States. Thus the north is represented by commerce; the south by cotton and fruits; the east by arts and science, and the west by agriculture. On other panels are representations of tapestry, plastic, metal, wood, and stone work. Over the northern entrance are depicted the triumphs of liberty; over the southern, the homes of cave-dwellers; above the eastern door-way is a birds-eye view of the Chicago of to-day, and above the western is its site as it appeared in 1492.

The California redwood from which was cut the section in the central rotunda of the Government building was 300 feet high and 81 feet in circumference. To cut and forward this exhibit in a number of subdivisions, on eleven railroad cars, cost, with the work of putting it together, more than $10,000. It was named the General Noble, after the late secretary of the interior.

Says the manager of the State department, G. Hunt, to whom I am indebted for a valuable dictation thereon: "Among the purposes of its exhibits was to popularize itself, especially by laying stress on its possession of the earlier records of the formation of our government, comparatively few of which have ever been printed. That people may see for themselves they have never been printed was indeed one of the objects of their exposition." As with other departments of the government display, this is not intended for the gratification of idle curiosity, but as an opportunity for study, its illustrations being so arranged as to stamp on the minds of the people the actual working of the department. It is worthy of note that the greatest interest in these groups is displayed by visitors of the middle class, who bring their children with them, show them objects of historic interest, and stop to explain their meaning.

HUNTER'S CABIN, WOODED ISLAND

The bronze statue of Washington in the State department is the property of Lord George Young, of Edinburgh. Executed, as I have said, by Baron Marchetti, it is the only copy of the original model by Howdon, under whom he studied at Paris, after the close of the revolutionary war. The latter was shipped to the United States with the expectation of receiving an order from congress, but was destroyed by fire.

To fire the 52-ton piece of naval ordnance requires a charge of 460 pounds of powder, and each time it is discharged, the sum of $1,200 is added to the expenses of the navy. To transport this gun was a task of no slight difficulty. Fashioned at the Watervliet arsenal, near West Troy, it was brought over the Pennsylvania railroad to the Exposition on two cars of similar construction, with triple sets of wheels and protected by a bridge, weighing in all 115 tons, apart from the locomotive. Whether the bridges would bear this enormous strain was somewhat doubtful, and at one time it was thought they could only be hauled over a track built for the purpose and avoiding the rivers; but this was found unnecessary. In the quartermaster's department is a display of barrack furniture, with bedding and bunks, mess-tables, cooking ranges, and other camp and garrison apparatus, and with farrier's and veterinary exhibits, showing the treatment of animals for lameness and disease. Here also is a forage wagon which formerly belonged to the army of the Potomac, and saw perhaps the roughest usage of any in the civil war, travelling, it is said, more than 40,000 miles before the war was ended.

JAMES ALLISON

Among the exhibits of the War department is a gun-stock lathe, for which, in 1822, a patent was issued to its inventor, Thomas Blanchard. This, the oldest and the first manufactured, became the property of one of the United States armories, where it remained until 1855.

Among the decorative features of the national museum is a collection of sportsmen's trophies, and of the portraits of prominent scientists in the various branches of natural history.

For the collection of stamps in the post-office department the Fair is indebted to the American Philatelic Association, and to individual collections, some of them containing a complete set of specimens issued by the country represented. In a word it is an exhibit of postage stamps by American collectors, under the auspices of the society. The cases were specially prepared for the purpose, roofed with heavy plate glass, and with a total capacity of 50,000. Though not equal to the best European collections, as the one in the imperial post-office museum at Berlin, it is probably the most extensive and complete thus far attempted in the United States.

For information regarding the Fisheries department I am largely indebted to its manager, T. H. Bean, who was kind enough to furnish me with a valuable dictation. By several firms contributions were made of rods, reels, and other fishing apparatus, the Montague City rod company sending many specimens of their choicest articles of manufacture, and the New York firm of Abbey & Imbrie a collection of salmon, trout, carp, black bass, and other rods, in addition to the one mentioned in the text, on which he who is inclined may expend the sum of $2,000. The largest collection of flies is from Charles F. Orvis, of Manchester, Vermont, and there is a handsome group, forwarded by D. W. C. Farrington, of Lowell, Massachusetts, together with several mounted specimens of trout.

There are many models of fish, indigenous to northern waters, whereby taking one year as the starting point of age, comparisons are made in the growth of such identical descriptions as belong to the lakes of Maine, Lake Michigan, and inland waters to the southward. Here are displayed the effects of climate, alkaline waters, etc., some reaching thrice the size of others and, as a rule, becoming larger toward the south.

By William F. Hubbard, acting under the instructions of his chief, Philip Walker, as special agent, I was supplied with an

ON BRIDGE NEAR MANUFACTURES BUILDING

excellent dictation on the Agricultural department. Exhibits worthy of mention in this connection, in addition to those described in the text, are a collection of plows of ancient pattern and a case containing cocoons raised in the United States, with specimens of silk and silken fabrics, and some of the apparatus used in China for preparing silk for market. In the entomological section nature is counterfeited in most realistic fashion. In one of the models, for instance, is a full-grown beetle in pursuit of a potato bug, which presently he will devour. In another is a soldier fly hovering above a potato bug on which he is about to pounce. The tomato and cotton worms are represented as attacking these plants, and so with the pests that injure or destroy the grape vine and citrus fruits. Collections of insects destructive to agriculture are mounted in cases that show in regular series their transformation and other insects which devour them. There is also a collection of spiders and other arachnida indigenous to the United States, among them the large specimens of New Mexican and Texan genera, such as catch and suck the blood of birds.

By Professor Eggleston, of the Forestry department, was suggested the idea of representing by the section of a tree the ages that have elapsed since the Columbian era, with their leading historic events. Only after long and diligent search did his agent in Mississippi discover this so-called Columbian tree.

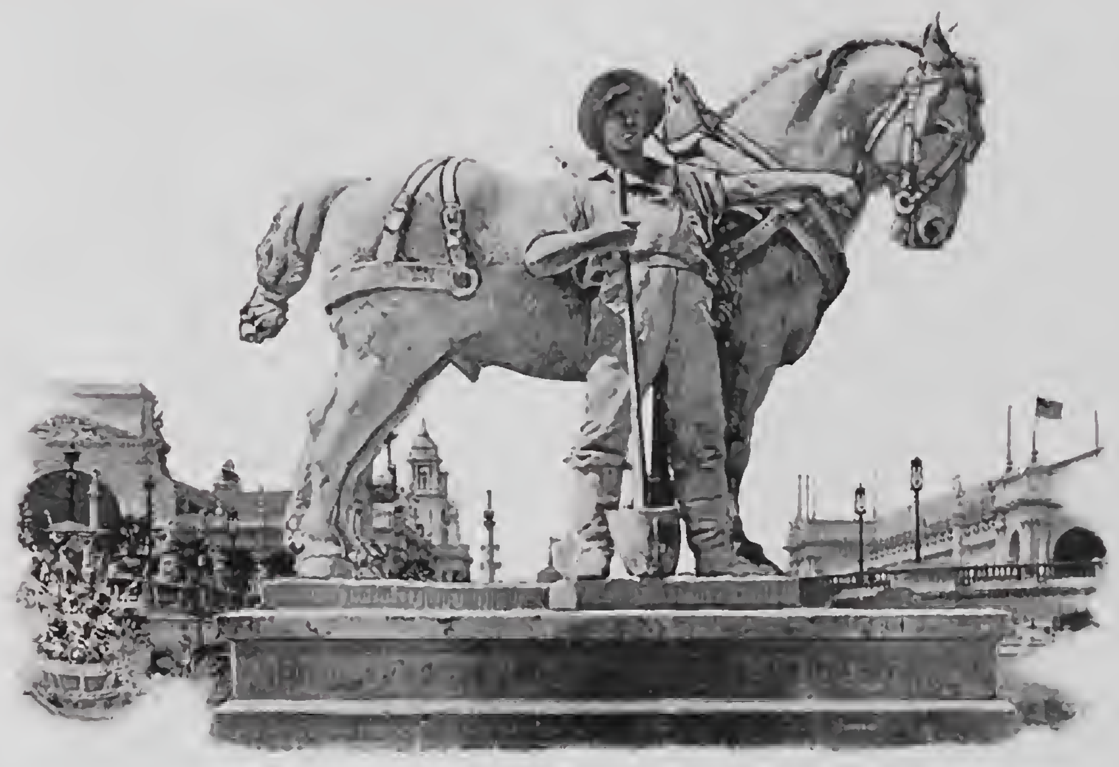
The *Illinois* was formally opened for inspection, as a model of one of our most powerful war-vessels, on the 3d of June, though visited by scores of thousands before that date. The ceremonies, which were of the briefest, were conducted on the gun-deck, under the direction of Lieutenant E. G. Spencer, and in the presence of a number of guests to whom invitations had been extended by her commander, Captain Taussig. On this occasion the ship was for the first time illuminated. Along the entire gun-deck two rows of electric lights depended from either rail, their glare subdued by globular shades or screens, after the fashion of Chinese lanterns. And so with the upper decks, above which the search-lights cast their glare athwart the surface of the lake. After her formal opening the *Illinois* was illuminated thrice a week, as were the Exposition grounds and buildings.

The life-saving station is under the charge of Lieutenant Charles H. McClellan, who served in the navy during the war, and for the last fifteen years has been engaged in this branch of the service. To take charge of the Fair station he was temporarily relieved from his command of all the stations between Cape May and Sandy Hook, and largely to his organization and management is due their efficiency. Among the apparatus of the station are the Lyle & Hunt guns, the former carrying a projectile weighing nearly 20 pounds and with line attached, to a distance of more than 500 yards, and that with such precision that a second shot is rarely required. More powerful but less accurate of aim are the Cunningham rockets, seven feet long, and carrying almost double the distance reached by either of the guns.

Among the collection of chronometers in the naval observatory is one that was used by Charles Francis Hall in his Arctic expedition of 1872. Buried in ice at a far inland station, it was found, several years later, by a member of the British expedition of 1876, and in good condition, though a part of its long imprisonment had been passed in a temperature 100° below freezing point. Another is a chronometer which Captain De Long used on board the *Jeanette*, and carried with him in his attempt to cross the frozen continent. It was found in his last camp on the Lena delta, where, with the last of his party, he perished of starvation, after subsisting for several weeks on a single teaspoonful of glycerine doled out thrice a day. Still another is the old-fashioned instrument which Captain Wilkes carried in his expedition to southern lands and waters in 1838-42. After nearly forty years of continuous service it still keeps perfect time. There is also in a large mahogany case, bearing the stains of many years, the clock which accompanied Commodore Parry on the voyage which opened the ports of China and Japan to the commerce of the world. Finally there are the chronometers, or what remains of them, belonging to the vessels wrecked at Apia, during the hurricane which a few years ago swept over the island of Samoa.

Those who stop to admire the gigantic section of the tree which stands under the dome of the Government building may be interested in knowing that it once grew in the edge of Converse basin, beyond the General Grant National park, California. It once stood, says a witness to its destruction, among a goodly company of quaint red-woods, interspersed with firs and pines of every variety, six thousand feet above the sea. Among the crew of those who felled it were men from Missouri, Maine, Virginia, Iowa, and Scotland. It had been agreed between the government and the contractor that no nail should mar its bark, and a swinging platform was also erected around it. The tree was cut fifty feet from the ground, measuring at this height seventeen and a half feet. From this huge stump thirty feet were taken for the Fair, all the interior sections being removed except a small thickness and the bark. The falling of the tree, which was two hundred and eighty-five feet in height, was witnessed by over one hundred people from the mills and adjoining camps, the event being thus described:

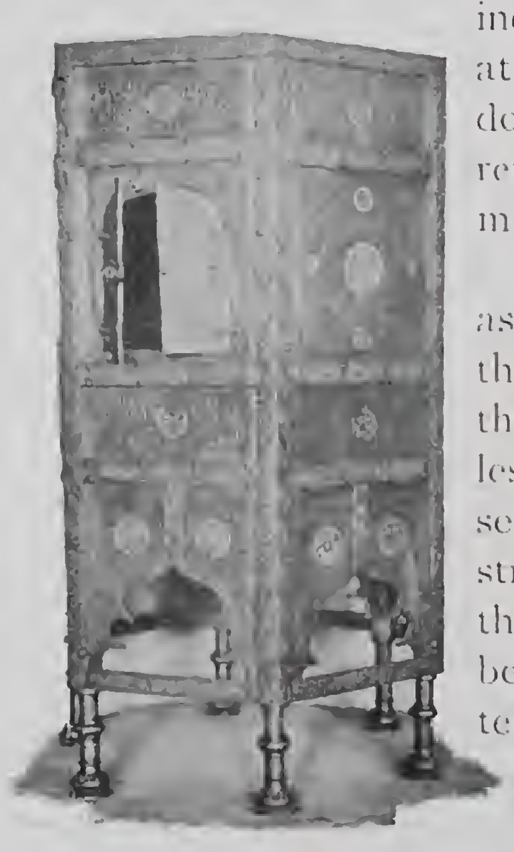
"The saw was withdrawn, the last wedge driven. The immense tree quivered like one in agony, and with a crushing, raging, deafening sound it fell, the extreme top, with its branches, falling upon an opposite hill and breaking into a million pieces. The larger part split as it fell at the base of the fifty-foot stump, and lay like the hulk of a monster ship—the weight of that part being estimated at over 200 tons."



O REGINA LYRAE, NATA DEVM, VIRIS
FESSIS AVXILIVM ET LAETITIAM FERENS

CHAPTER THE EIGHTH

MANUFACTURES OF THE UNITED STATES



GREATEST of all the exhibits of the Fair are the palaces which contain them, forming of themselves a display more superb and imposing than any of their contents. Viewed from a distance sufficient to display their sky-lines, as in their entirety they only can be viewed to advantage, these temples of industry present a dazzling spectacle. As seen from the waters of the lake, and especially at eventide, when their long array of columns and porticos, their lofty towers and stately domes, mirrored in the waters, stand forth against a glowing sky, they are in truth a revelation surpassed only by the inspired vision of him by whom was beheld the city not made with hands.

If of mammoth proportions, these halls of the great display are not only so arranged as to present to the best advantage their manifold contents, but such is the harmony of their general effect, and such their wealth of decoration, that the observer soon forgets their hugeness. While few of the structures are intended to endure, they will none the less be criticised, at least as to style and formative qualities. Buildings in their proper sense they do not pretend to be, such as was the great palace of iron and glass constructed for the London exhibition of 1851, and at its present location at Sydenham still the delight of holiday multitudes. The latter was a permanent edifice and intended so to be; but in the elaborate decoration of the Chicago Exposition we have what may be termed so many architectural screens, surrounding the framework of wood and iron which of itself would be incapable of the heroic dignity of expression presented by the city of the Fair.

Not only for its size, but for its severely classical style, its grandeur of motif, and its unity of composition, its peristyle of fluted columns, nearly a mile in length, but relieved by hundreds of symbolical figures, its four great portals one in the middle of each façade, fashioned like triumphal arches, its corner pavilions, with their spacious entrance ways, of themselves temples of art—for these and other features the hall of Manufactures and Liberal Arts is one of the most marvellous among all the marvels of modern architecture. To say that this is the largest building ever erected for exposition purposes; that it is 1,687 feet in length and 787 in breadth; that from the floor to the ridge of the roof is 236 feet; that it has more than forty acres of exhibiting space; that through it extend longitudinally and laterally two avenues 50 feet in width; that it has thirty main stairways, each 12 feet wide; that around it and within it is a gallery 50 feet wide, with smaller galleries innumerable, from which vantage point may be conveniently

A STILL HUNT

GLORIFICATION OF DISCOVERY

viewed almost at a glance its rich and varied display—all this would not enable the reader to form an adequate conception of the monumental edifice in which are housed many thousands of exhibits, representing the industrial and liberal arts of the civilized nations of earth.

With this huge palace of industry no point of comparison can be taken, for nothing of the kind exists. Nor does it help us to know that, in its construction there were used 1,260 carloads or 16,500,000 feet of lumber, nearly 200 tons of nails, several thousand tons of iron and steel, and 60 tons of paint; that the sky-lights alone cover a space of eleven acres, and consumed 65 carloads of glass, with eleven additional carloads for the 900 large windows which the building contains. Perhaps of its dimensions no better idea can be given than to state that on its site could be erected about 500 residences, each with a lot of 25 by 100 feet, capable of accommodating in all at least 5,000 persons, and that with far less crowding than is felt in the more crowded portions of Chicago. In the construction and placing of the arched steel trusses which uphold the vast semicircular roof of the main hall, unsupported by a single column, was accomplished one of the greatest engineering feats of the age. There are twenty in all, apart from those at the ends and corners, with a total weight of 6,500 tons, each fourteen feet wide at the floor, ten at the apex, and with a span from base to base of 732 feet. To handle these huge girders a special appliance was contrived in the shape of an immense traveller or derrick, which was even more of a marvel than the girders themselves. This was probably the largest machine of the kind ever constructed, 300 feet long by 50 in width, with a central height identical with that of the roof, and with arms or extensions, 70 feet in length. Thus the workmen were enabled to place the girders in position, the derrick running the entire length of the building, on a track supported by piles, with six carriages, each with as many sets of wheels. No wonder that this feat called forth the admiration of European engineers, that it was the subject of universal comment among the scientists and scientific journals of the world, by most of whom failure had been predicted.

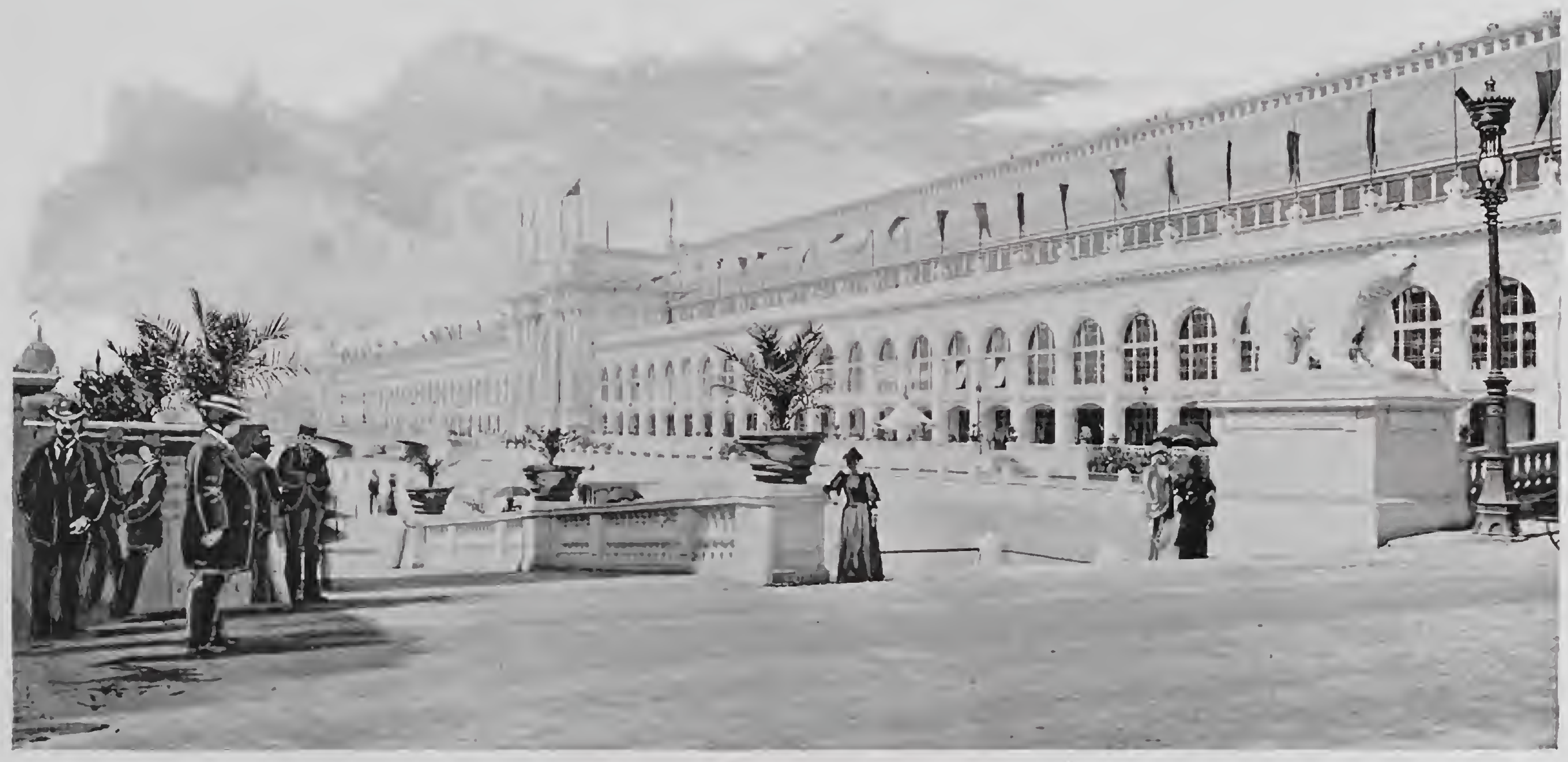
The central hall itself, with its clear story windows and its roof of iron and glass, is a structure nearly twelve acres in extent, compassed by a spacious system of naves and aisles and galleries, the first more than a hundred feet in width. Of its floor a portion is occupied by exhibits, presently to be described, the remainder set apart for such gatherings as were assembled at the dedication and opening ceremonies.

During the eighteen months or less that the building was in process of construction, beginning with August, 1891, from 500 to 700 men were employed; nor was there at any time the slightest difficulty in procuring either labor or material, notwithstanding the hazard and dimensions of the work. Everything was done in stable and substantial fashion, so that the fiercest of winter storms did not tear to pieces any portion of the unfinished edifice. If here and there was an appearance of instability or frailness, it was only an appearance, and never was task more thoroughly and conscientiously performed. The preparation of the site was of itself a labor of no ordinary magnitude. In some parts it was merely a swamp; in others a sand-dune. Into the marsh there were driven 3,500 piles to a depth of 35 feet, and in the sandy portion eight or ten feet of soil must be cleared away before a foundation was reached. Elsewhere was made what is termed in builders' phrase a spread foundation, formed by digging large square holes and filling them with heavy timbers laid cross-wise to the surface. Thus only could be secured the solid base on which is reared this temple of industry and art.

THE ARTS OF WAR. [illegible]

In the construction of this edifice were presented new problems not only in mechanical engineering but in architectural treatment; and first of all how to extend along the lake shore the wall of a structure more than two furlongs and a half in length, without dwarfing the adjacent buildings and impairing the landscape effect of the grounds. It was the original idea of its architect, George B. Post, to use a portion of his allotted area as courts or gardens, inclosed within the rectangular walls of the main fabric, and adorned with fountains and kiosks. But to do so would be to waste many acres of exhibiting space, and as the application for that space showed that even if used to the best advantage it would be all insufficient, the first design was abandoned. Then it was that the plan was adopted of forming in the interior the largest open nave that was ever constructed, yet one to which the graceful curve of the arches supporting the mountainous roof would impart a symmetrical appearance, making it an artistic no less than a mechanical feature of the Exposition.

By many the artificer of the Manufactures building has been accused of poverty of design, for between the central arches and corner pavilions he gives no intermediate accentuations, nothing to relieve the long array of two-storied columns and fluted archways. But to break with domes or towers its strictly classical lines would have been to sacrifice truth and unity for the sake of the picturesque, and even had this been done, it would have failed to give to these immense walls of architecture the symmetry that can only be given by a just correspondence of parts. Taking for his unit of measurement a length of twenty-five feet, the architect included in his plan this interminable series of bays, fifty-eight on the longer fronts and twenty-two on the shorter, preserving his façades unbroken, except for the central and corner arcades.

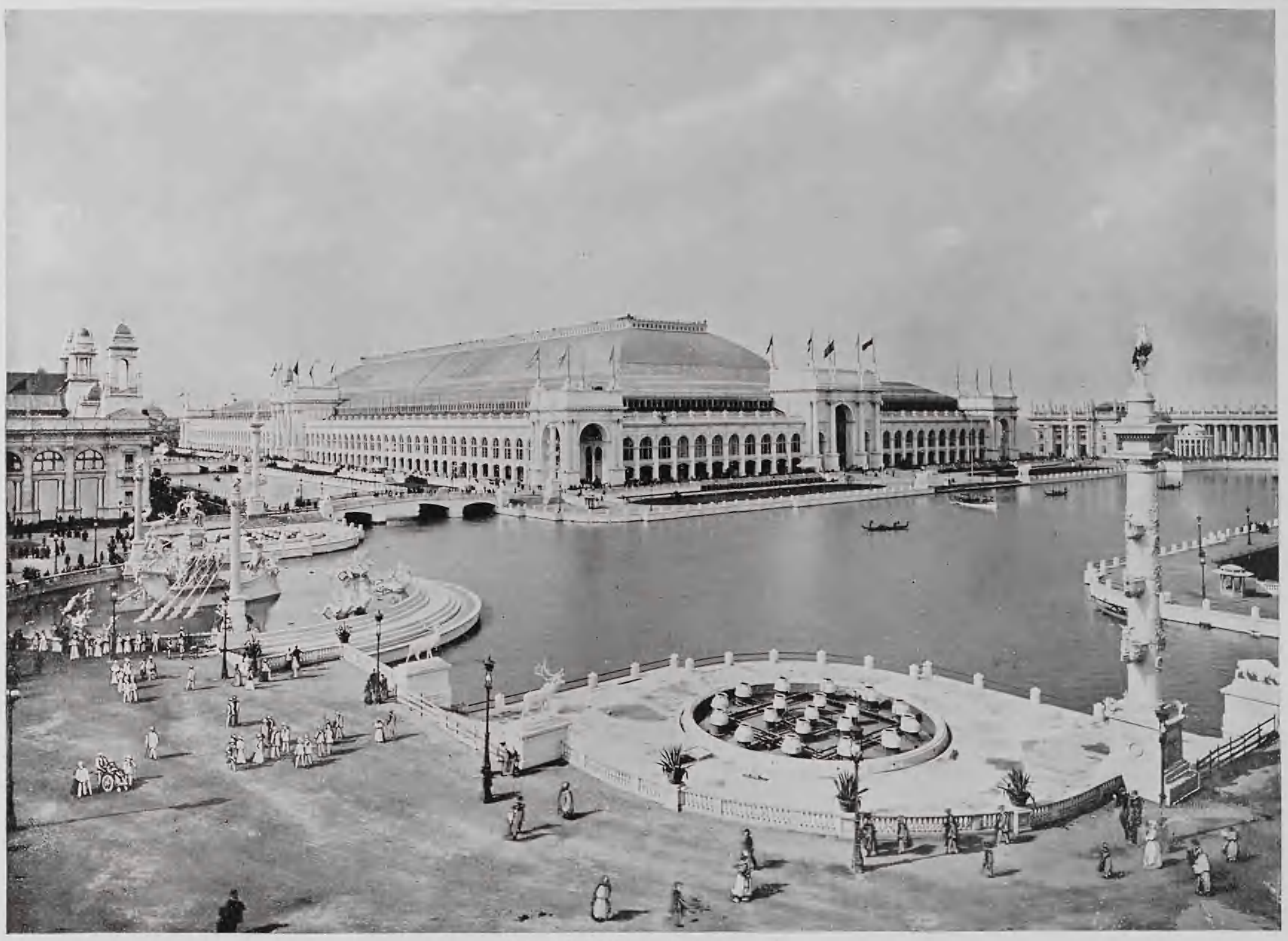


PALACE OF MANUFACTURES AND LIBERAL ARTS

In the central pavilions has been reproduced, on a larger scale, the triple triumphal arch of the days of Constantine, and in the corner pavilions, at the turn of their corners and on each face of their angles the single arch of Trajan, the latter with double Corinthian columns. The entablatures are in horizontal form, with lofty attic, and in front of the piers are columns more than sixty feet in height, also of the Corinthian order, and resembling those depictured in the temple of Jove the Restorer. In these lofty and pedestaled columns, standing boldly forth from the otherwise unbroken surface of the façades, we have the only strong perpendicular lines in the entire edifice.

Says one of the architects: "It is evident that within his classic Roman frame Mr Post has desired, in his detail of decoration, to bring his design into sympathy with modern civilizations; for we shall see that the luxury of Napoleon III affects the sculpture of his spandrels and panels, and that nearly all the ornament bears traces of the influence of the latest French Renaissance and the last Paris Exposition. Moreover, in order to relieve his design from the serious expression imposed upon it by the grandeur of his leading motives, he makes a very proper concession to the festive and holiday aspect which should pervade the place by planting permanent standards and gonfalons on his triumphal arches, and by decorating his battlements with banner staffs and bunting.

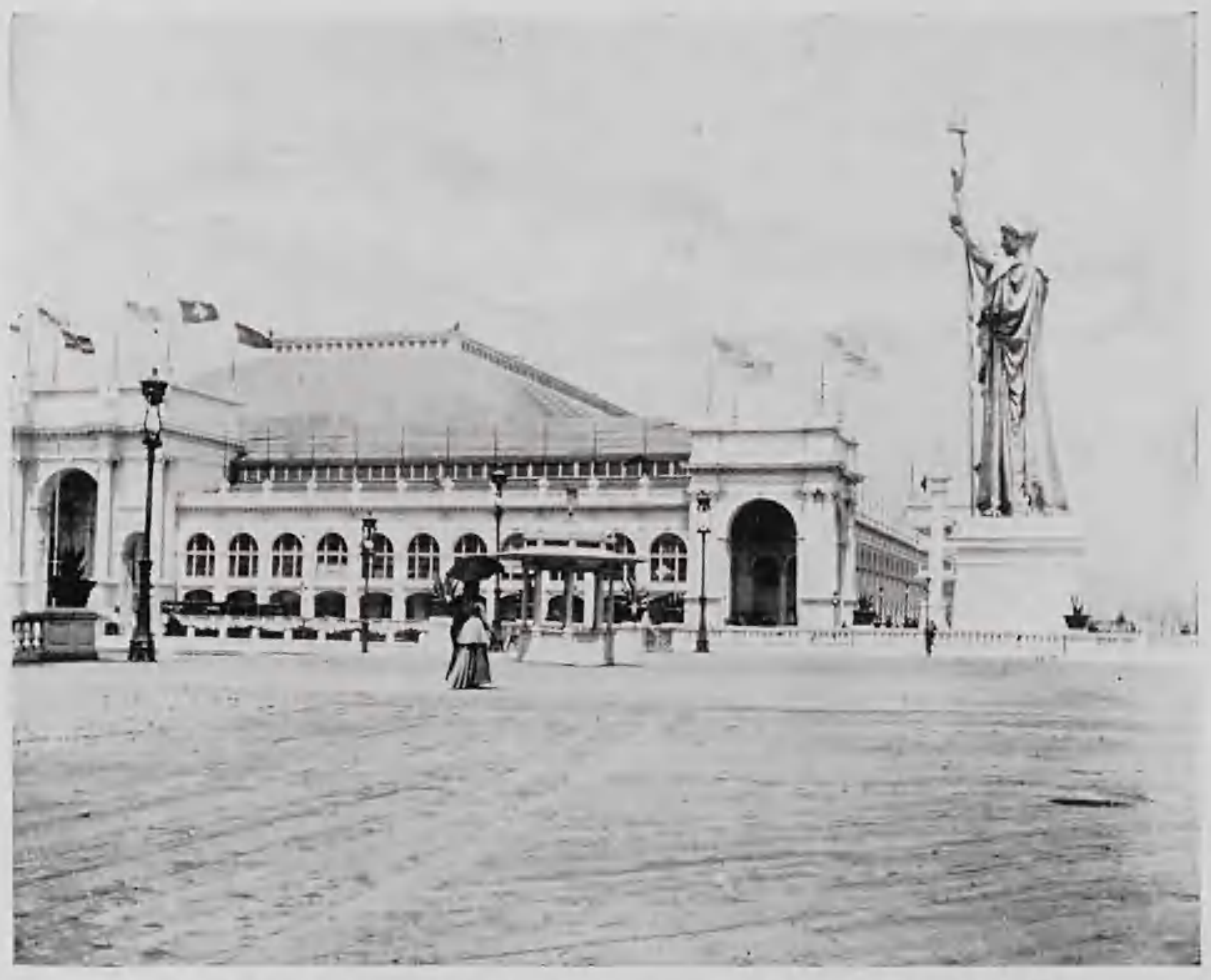
"It may be proper, before leaving the consideration of the largest of these buildings, to look back upon Mr Post's immense façades, and to ask whether, if they had been treated with the variety, contrast, and balance of motives customary in the works of the renaissance, if they had been broken by towers and campaniles, or tormented by gabled pavilions, they would not have presented a somewhat confused and incoherent aspect,



AROUND THE MANUFACTURES BUILDING

wanting in apparent unity of thought, and resembling rather a combination of many buildings of various uses than a single building of one use; and further, whether the simplicity of treatment which he has preferred has not resulted in a composition having architectural qualities which, instead of confusing and puzzling the mind, can be read, understood, and remembered with pleasure. The civilization of our time owes a debt of gratitude to any architect who, in the midst of the temptations which beset us to force effects of beauty by affectations and mannerisms, dares to make his work at once strong, simple and elegant."

While simple in plan, too much so perhaps to suit the taste of the average sight-seer, the hall of Manufactures is richly adorned with decorative paintings. On one of the domes of the northern portal is depicted the genius of electricity, wielding the thunderbolt, and by female figures are illustrated the various branches of electrical science. Thus the dynamo is represented by a woman seated on a magnet, and at her feet, a belt and revolving wheel; at a Morse instrument is the personification of the telegraph; an arc-light is held aloft by a female form on bended knee, and the telephone is symbolized by a figure holding a tube to her ear, and around her the tape of the indicator. On the opposite dome is a group representing the abundance of land and sea. On the arches of the pavilion in the centre of the east façade are typified by stalwart artisans, with all the accessories of their



SOUTHEAST CORNER MANUFACTURES BUILDING STATUE OF THE REPUBLIC craft, wood-carving, stone-cutting, forging, and machinery, and by female figures, steel-working, building, and ceramic arts, the last by a stately damsel with vase and brush, in drapery of blue and white.

In one of the domes of the southern entrance iron-working is symbolized by a sturdy representative of his craft, and ornament, design, and the textile arts by female figures, between which boys are waving branches of palms and lamps of antique pattern, their smoke curling in wreaths against an opalescent sky. In the other dome, women seated on the balustrade, in drapery of purple, green, and blue, represent the goldsmith's craft, and the decorative, textile, and other arts. In the western pavilion are also figures typical of decoration and design, with vases connected by festoons of flowers and vines, and in the opposite dome, forms symbolic of metal-working. In the corner pavilions are depicted the arts of peace and war, of music and the chase, while education is represented by a gathering of students, some rendering homage to Pallas Athene, and others engaged in the more sensible task of study or critical analysis.

ON THE ROOF OF MANUFACTURES BUILDING

As to the scope of the exhibits, it may first of all be stated that they include almost as many participants as were represented in the entire Centennial Fair, excluding from the latter the single department of agriculture. In thirty-five groups of unusual size, divided into more than two hundred classes, and in some of the classes from one to three-score collections, are displayed the choicest products of man's handiwork, aided by the best and most recent of modern machinery in all the forms and patterns that have taxed the ingenuity of the human race. Never before has such an opportunity been presented of comparing the relative progress of manufacturing industries among European, American, and Asiatic nations, together with their inventive genius, whether in the direction of labor-saving appliances or of improvements in quality and design.

The Manufactures department does not contain, as too often has been the case in former expositions, merely a huge collection of warehouse commodities; it is rather a comprehensive display of the choicest specimens culled from the manufactured products of all the nations, with the allotments of space among many thousands of participants reduced to a minimum, that justice might be done to the greatest number and room afforded for all the most worthy exhibits. As to classification, it was proposed by the chief of the department "to secure such perfection of detail and such logical, consistent, and harmonious combination in the arrangement of the several classes and groups as will secure a display which will be both instructive and artistic, appealing to the intelligent and æsthetic sense of each observer."

In few departments of the great World's Fair has more of interest been aroused than in this rich and varied display, representing the progressive industries of our own and foreign lands. Here are not only the choicest products of American and European factories, but those of nations which, though as yet making little use of mechanical appliances, are in some respects superior to either. Here may be compared the silks of China and Japan, their porcelains, their lacquer and wood work, their bronze and copper work, with those

AT THE SOUTH ENTRANCE MANUFACTURES BUILDING

ALONG THE GRAND CANAL

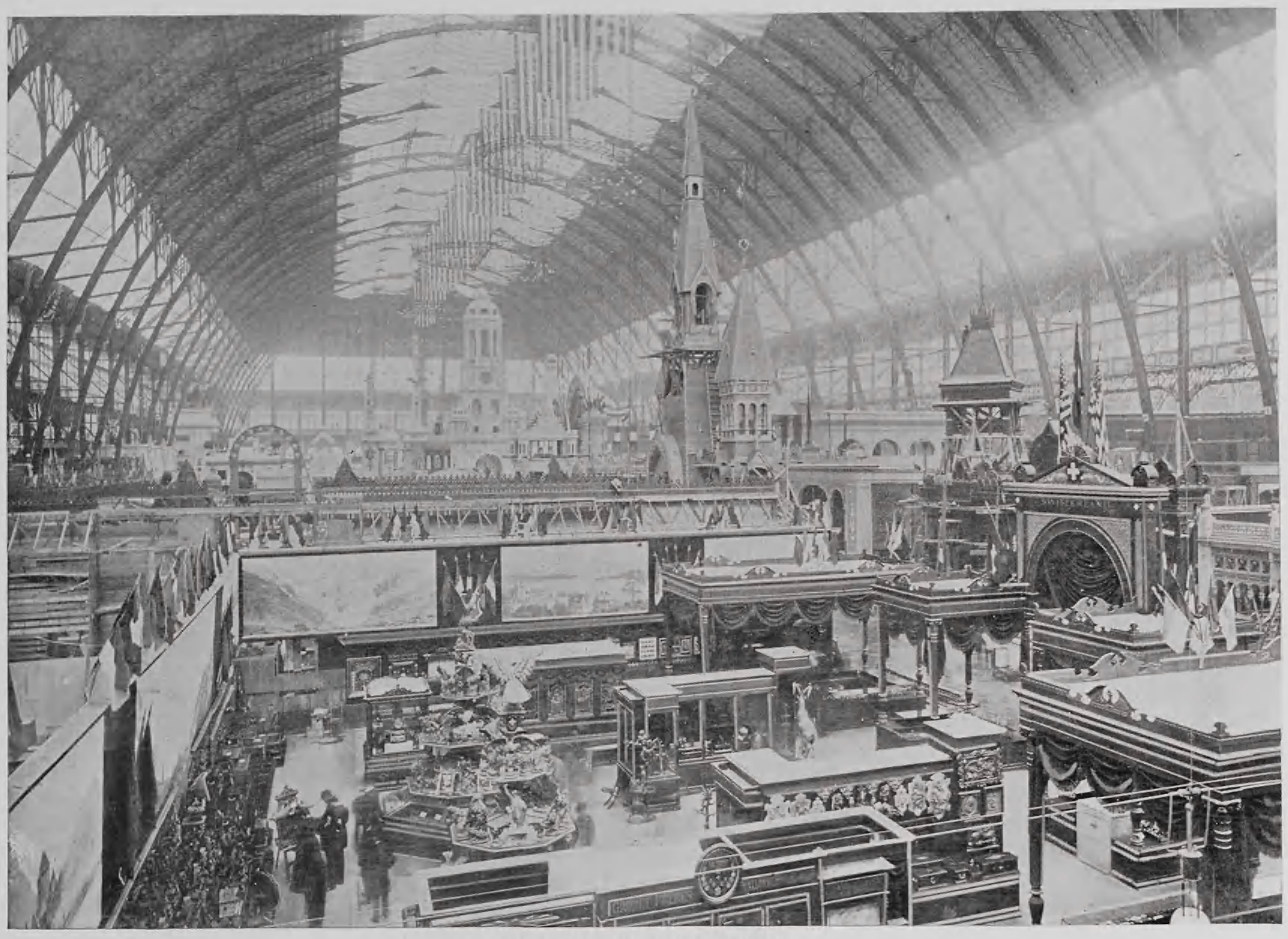
which France and England produce. Here also may be noted the cruder products of countries whose manufacturing industries are yet in their infancy, such countries as Zanzibar and the Orange Free State, as Madagascar, Corea, and Siam.

As an indication of the world-wide participation in this department, it may be mentioned that the room requested for the accommodation of single industries would, if granted, have covered more than half of its forty acres of flooring. When it is remembered that here are represented many hundreds of industries, it will be seen that in the allotment of space alone the managers had before them a task of no slight difficulty. But a still more arduous task was that of placing under a single roof all these numberless specimens of human ingenuity, while avoiding needless duplication and amplitude. This was indeed a problem which tested the skill and patience of the management. Nevertheless it was accomplished, and here we have by far the most ample and valuable illustration of industrial progress ever beheld by man, the greatest triumph that has ever been recorded in the history of the useful arts.

In this palace of magnificent distances, the visitor, notwithstanding the skilful grouping of its contents, finds himself somewhat at a disadvantage in comparing the classes of exhibits as arranged under various nationalities. Thus to compare the textile fabrics of Persia with those of the United States, he must walk more than a third of a mile, for they are in groups diagonally opposite, the former near the south-western corner, and the latter in the north-western portion of the building. Starting, let us say, from the American collection, he must traverse almost the entire length of Columbia avenue, as is termed the main longitudinal nave which, together with the transverse nave, intersecting it at right angles, divides the ground floor into four equal sections. Thence, into a lateral aisle near the southern portal, he turns to the right, and after passing the pavilions of Italy and Spain, finds himself at length in front of the Persian booth.

Except for a chamber in the southeast corner of the building, devoted to the liberal arts, the entire ground floor, together with two of the gallery sections, is occupied by the department of manufactures. Before making the tour of its thirty acres of exhibits, which, for the purposes of the sight-seer is almost equivalent to a tour of the world, let us glance for a brief moment at the plan of installation and the space allotted to home and foreign participants. First of all this space was divided into sixteen sections, lettered in alphabetical order, and each section into four numbered blocks, except for those marked A, I, H, and Q, which contain only three blocks. The exhibits are arranged in classified groups, and the location of each is indicated, not as in the classification list, but by one or more of the letters between A, and Q, and one or more numbers between one and four. Thus furs and fur clothing, marked group 105 on the list, are installed in section G, block one; some groups, as that of furniture,

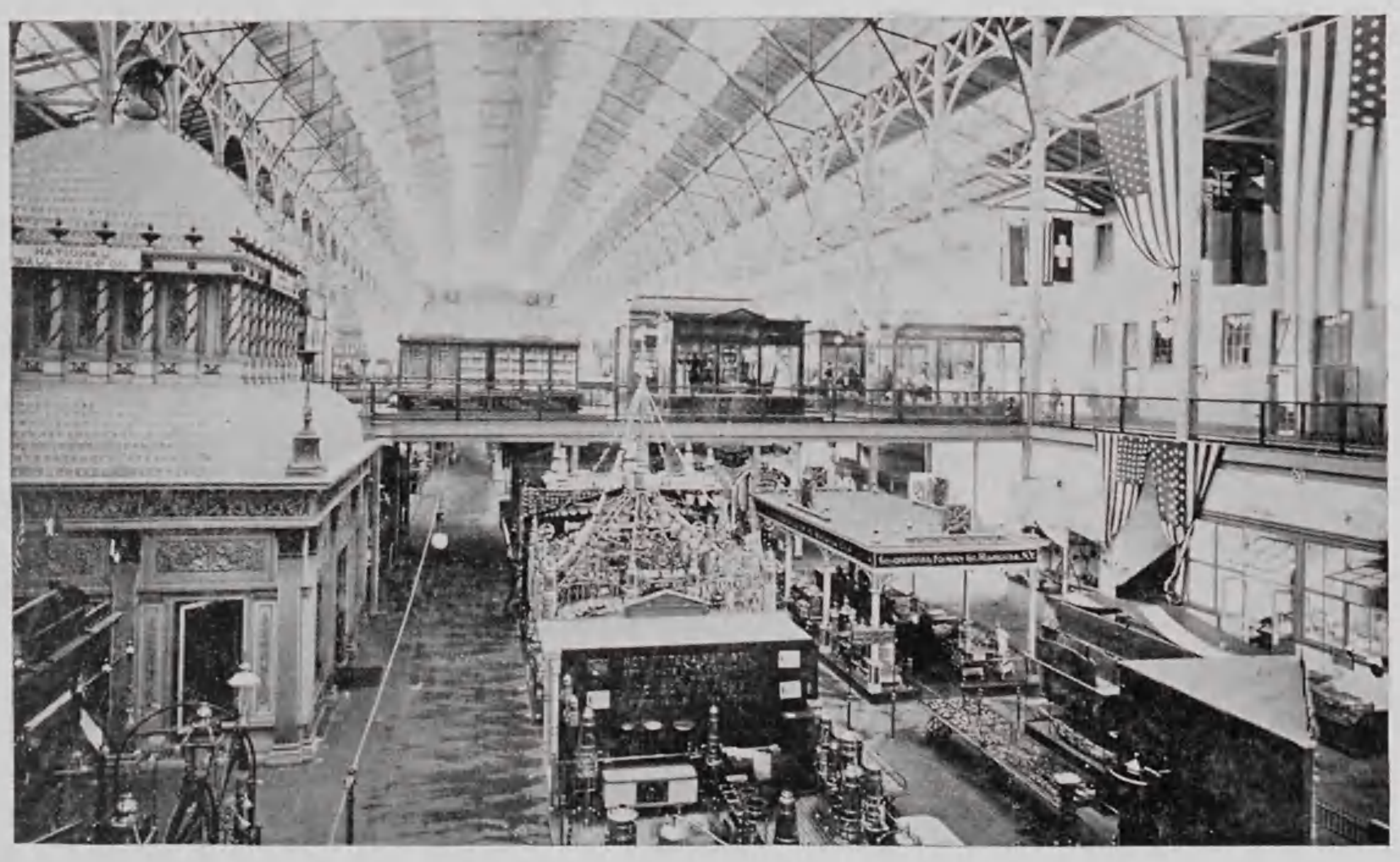
EAST FRONT MANUFACTURES BUILDING



INTERIOR VIEW MANUFACTURES BUILDING

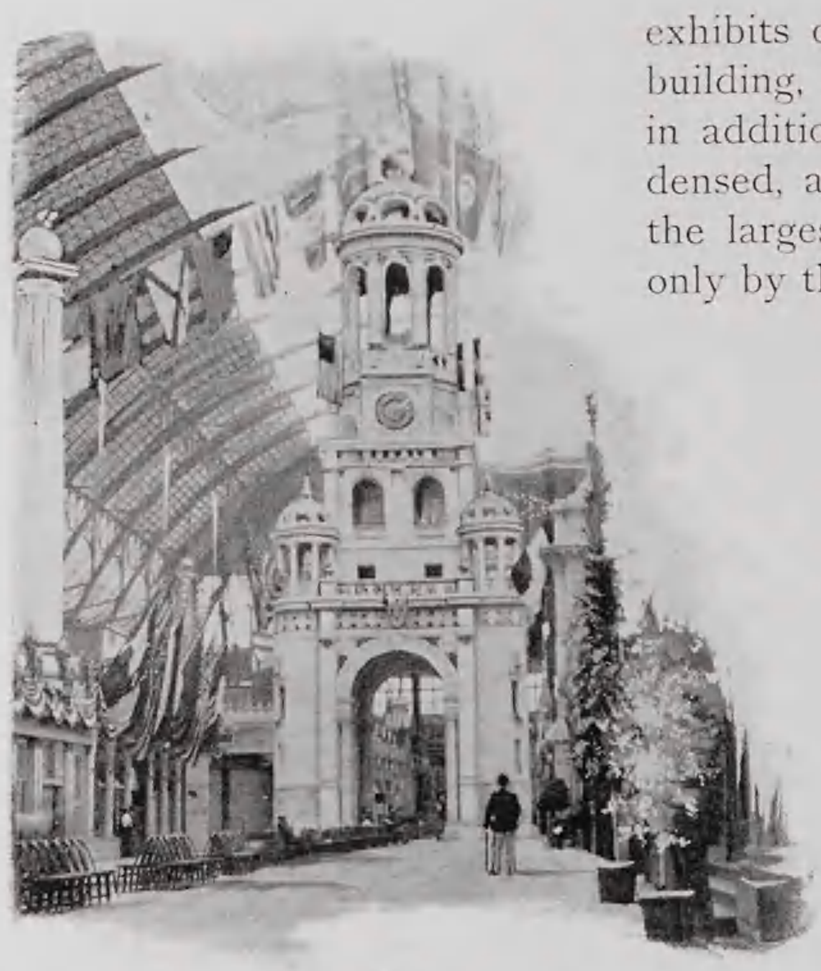
upholstery, and artistic decorations, occupying blocks in several sections. To the exhibits of the United States was allotted nearly one-third of the total exhibiting space, and yet but little more than ten per cent of the space applied for. To foreign powers assignments were in proportion to the scope and character of their display. Encircling the building on all its four sides are the minor compartments of officials, restaurateurs, and others, to whom concessions were granted.

Entering through any of the numerous portals, we presently find ourselves at the spot where Columbia avenue is intercepted by the transverse nave, each fifty feet in width. Here, in the centre of the great circular court which surrounds the point of intersection, flanked by the exhibits of the United States, of Germany, Great Britain, and France, the first thing that strikes the eye is a clock tower of elaborate design, 40 feet square at the base and 125 in height, with four entrance ways, separated by corner pavilions. From one of these pavilions, stairways lead to the third floor, with access by ladders to the clock floor above. The clock, which serves as the official timepiece of the department, is worked by electricity, with dials seven feet in diameter, and above it, on still another floor, is a chime of bells, set in motion by its machinery, and whose music may be heard afar over the waters of the White City, the bells being set in motion by its machinery and by a keyboard in the jewelry section, with which it is connected by electric wires.



VIEW FROM GALLERY MANUFACTURES BUILDING

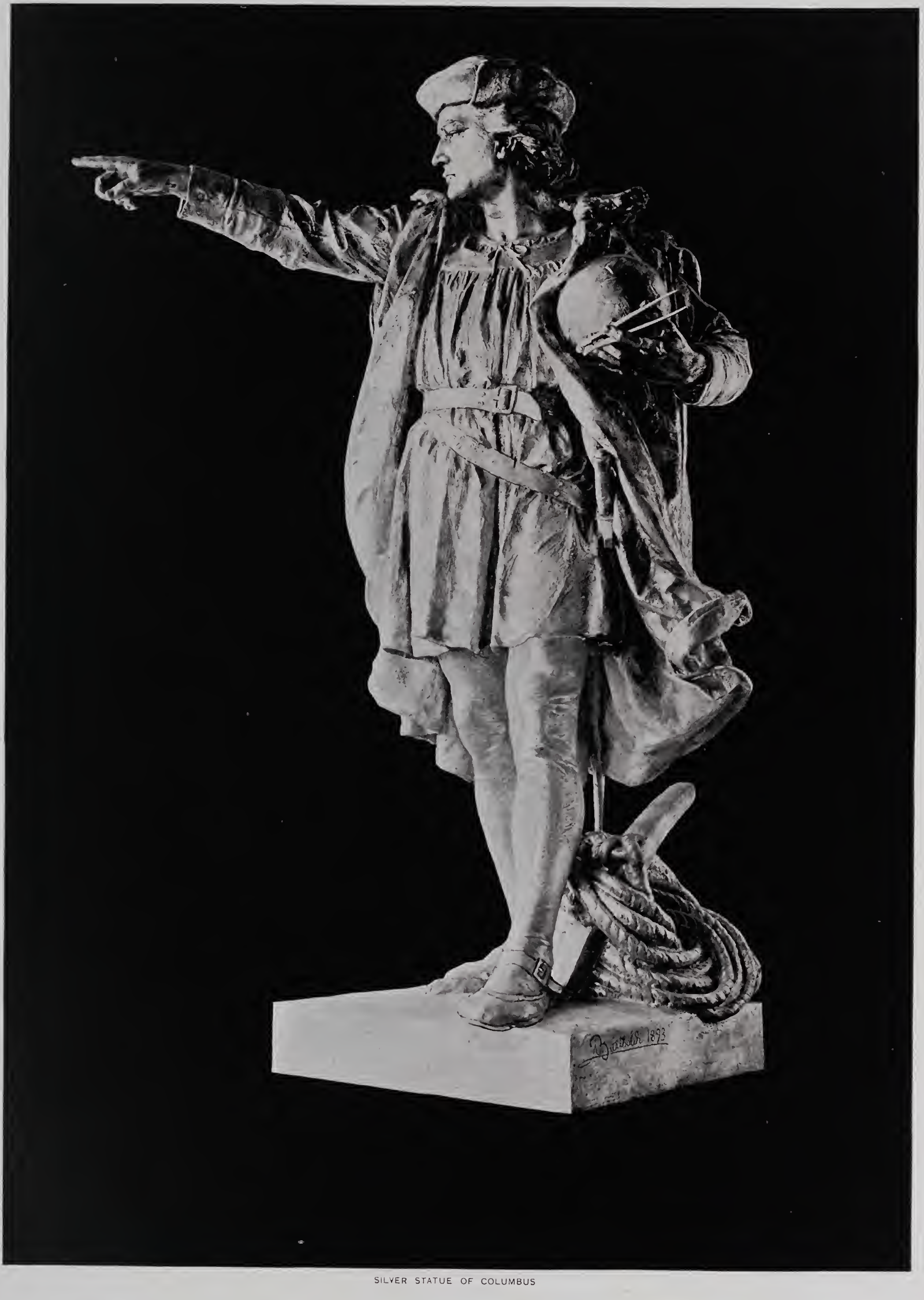
From the central court, the



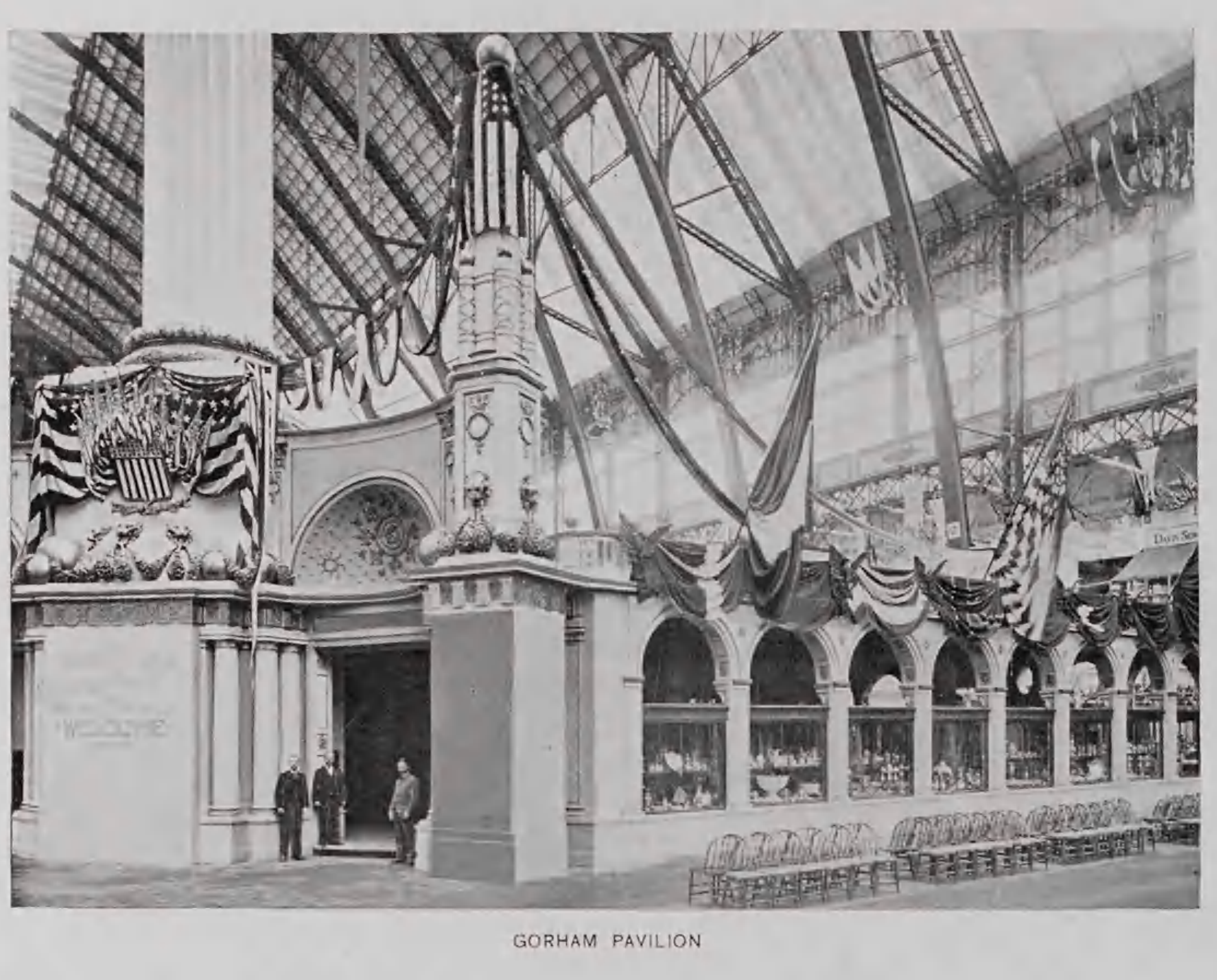
THE CLOCK TOWER

exhibits of the United States extend along the entire north-east quarter of the building, and thence westward in a narrower section along the northern side, in addition to about 100,000 square feet of the gallery floor. Though condensed, as I have said, into one-tenth of the room applied for, this is by far the largest and best display of home industries ever made by any country, and only by this process of condensation could the management secure a choice and yet complete collection, one that would bear comparison with the most select of foreign groups, and would not completely dwarf their more compact exhibits. While duplications of the same product were in a measure inevitable, they have as far as possible been avoided, and it is not on account of wearisome repetition that the visitor turns aside to the foreign pavilions on the opposite side of the nave, where he passes rapidly from one species of fabric to another. By certain foreign critics it has been alleged that in symmetry, variety, and skilful blending of groups, the exhibits of the United States compare unfavorably with their own; that their setting is faulty, and their environment unattractive. But it should be remembered that they cover many times the space allotted to any foreign participant, and with specimens many times as numerous, thus forbidding the individual characteristics and more rapid transition of their European neighbors. Moreover, not a single dollar of government funds has been expended on our own display, while by Germany, France, and other powers, a part of their liberal appropriations was devoted to the unification of their exhibits, another portion to the pavilions which contain them, and still another to the selection by experts of such articles as would most creditably

ELEVATOR, MANUFACTURES BUILDING



SILVER STATUE OF COLUMBUS

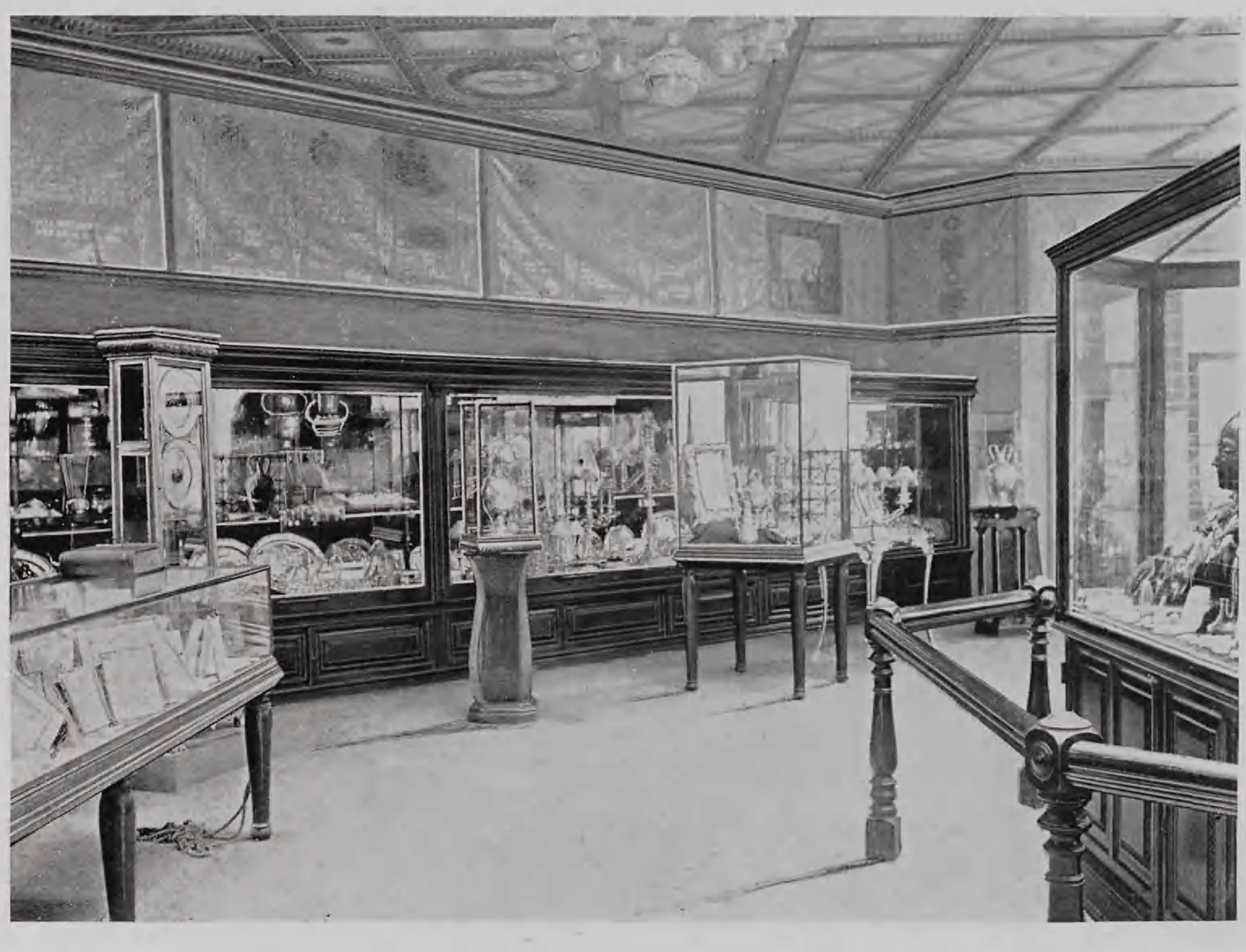


GORHAM PAVILION

represent the progress of the nation and the exhibitor.

If in certain classes of products our exhibits are excelled by those of foreign lands, our silks for instance by those of France, and our porcelains and cut-glass ware by those of Austria and Bohemia, this is more than atoned for by excellence in other directions. While in the foreign pavilions are many beautiful objects for the eye to rest upon, such as are well worthy of a place in homes of refinement and culture, and especially in the home of the Fair, we have in our own section the very embodiment of industrial progress, the substance of material prosperity. The visitor whose purpose is not merely to be amused, or to study art alone, whether on canvas, in statuary, or in its application to works of common utility, will, if he reads aright the lessons of an exposition intended to display the relative and individual development of the nations, find in the American booths much that is of absorbing interest, both from an industrial and artistic point of view.

Opposite the northeast section of the central court is a cream-colored pavilion decorated in gold, in front of it a tall fluted column with Doric capital, at the base of which is the inscription, Exhibits of the United States of America. Here are some of the most costly groups on exhibition—those of the New York jewelry firm of Tiffany and company and the Gorham Manufacturing company. In the arches of the pavilion are



GENERAL EXHIBIT, TIFFANY

SILVER TEA SERVICE

panels on which, among other illustrations, are the London workshop and salesroom of a silversmith of the seventeenth century, the patron saint of the craft. In the spandrels between these panels are medallions in relief of famous designers and silversmiths, from Holbein and Michael Angelo to Paul Revere.

The floor of marble mosaic is divided into sections by cases of mahogany and glass, filled with samples of the company's work, electric lights being extended around the columns which support the roof, and grouped beneath the ceiling above a silver statue of Columbus. Designed in clay by Bartholdi, and modelled in plaster of Paris, the statue was cast in solid silver, the oxidized form of the metal being used for finishing, to give more life-like coloring, with play of light and shade. In this figure, somewhat more than six feet high and probably the largest statue ever fashioned in silver, were used 36,000 ounces of the metal, as nearly pure as its purposes would permit. On the handles of silver table utensils, some of them inlaid with gold, are portrayed in bas-relief of clear and simple design, the leading events in the life of the great discoverer, beginning with his appeals to the courts at Granada, and including among other incidents his departure from Palos, his landing, his second voyage, his captivity, and his death.

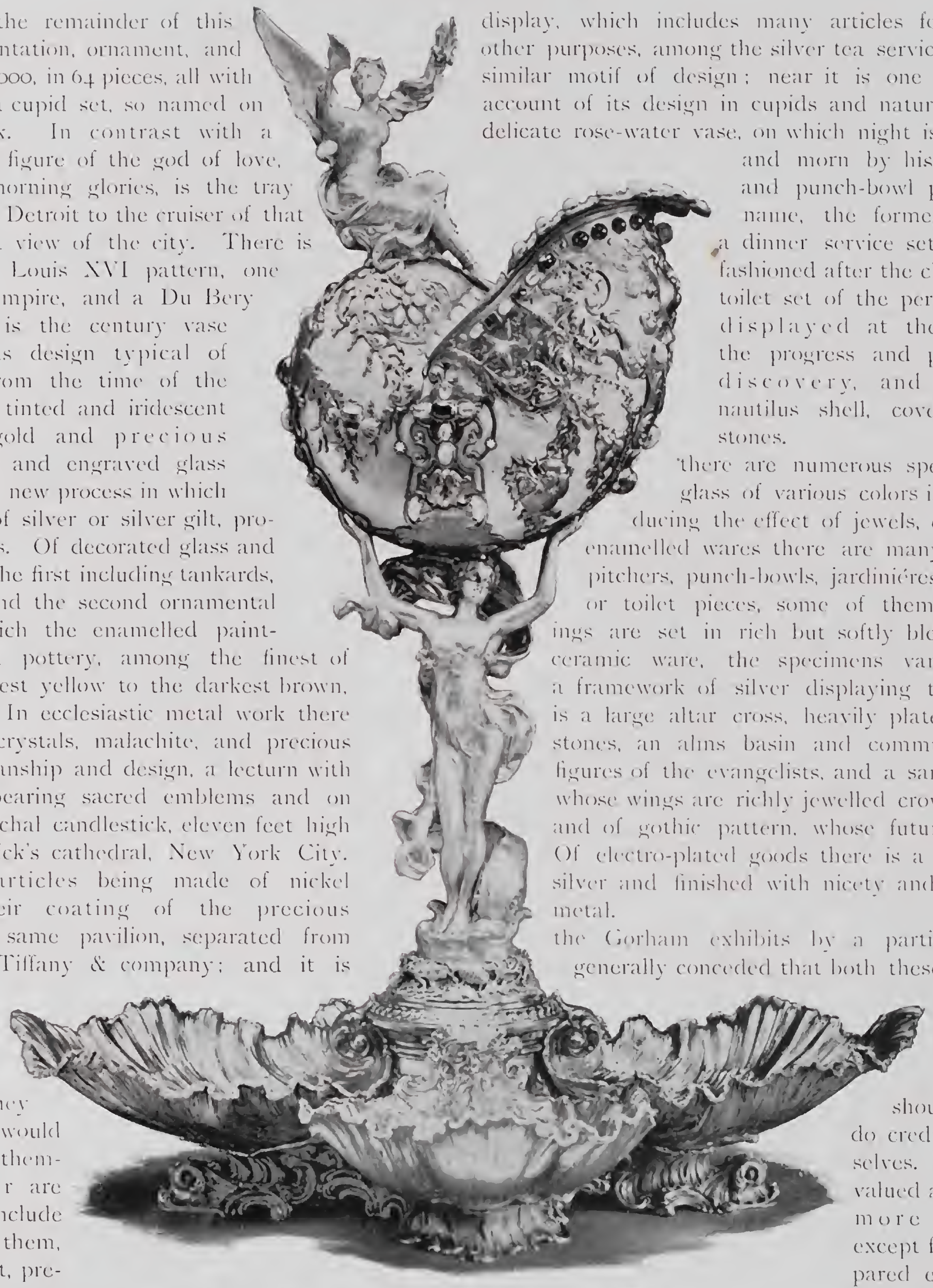
MAGNOLIA VASE

GLASS AND GOLD

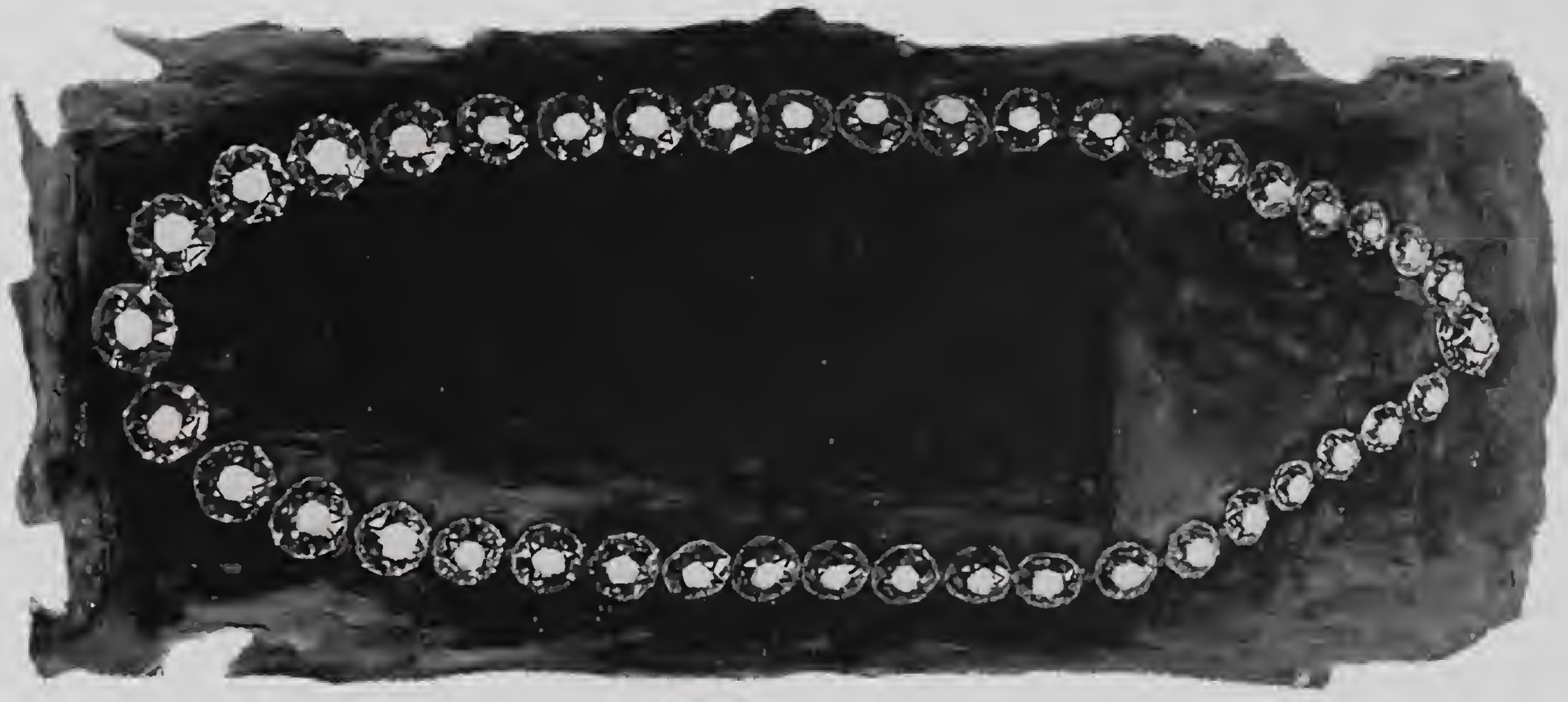
As to the remainder of this display, which includes many articles for household use, for presentation, ornament, and other purposes, among the silver tea service sets is one valued at $20,000, in 64 pieces, all with similar motif of design; near it is one of Japanese pattern, and a cupid set, so named on account of its design in cupids and natural flowers in repoussé work. In contrast with a delicate rose-water vase, on which night is represented by a sleeping figure of the god of love, and morn by his awaking in a bower of morning glories, is the tray and punch-bowl presented by the citizens of Detroit to the cruiser of that name, the former presenting in bas-relief a view of the city. There is a dinner service set of oxidized silver of the Louis XVI pattern, one fashioned after the classic models of the first empire, and a Du Bery toilet set of the period of Louis XV. There is the century vase displayed at the Centennial Exposition, its design typical of the progress and prosperity of America from the time of the discovery, and there is a yacht cup of tinted and iridescent nautilus shell, covered with a network of gold and precious stones.

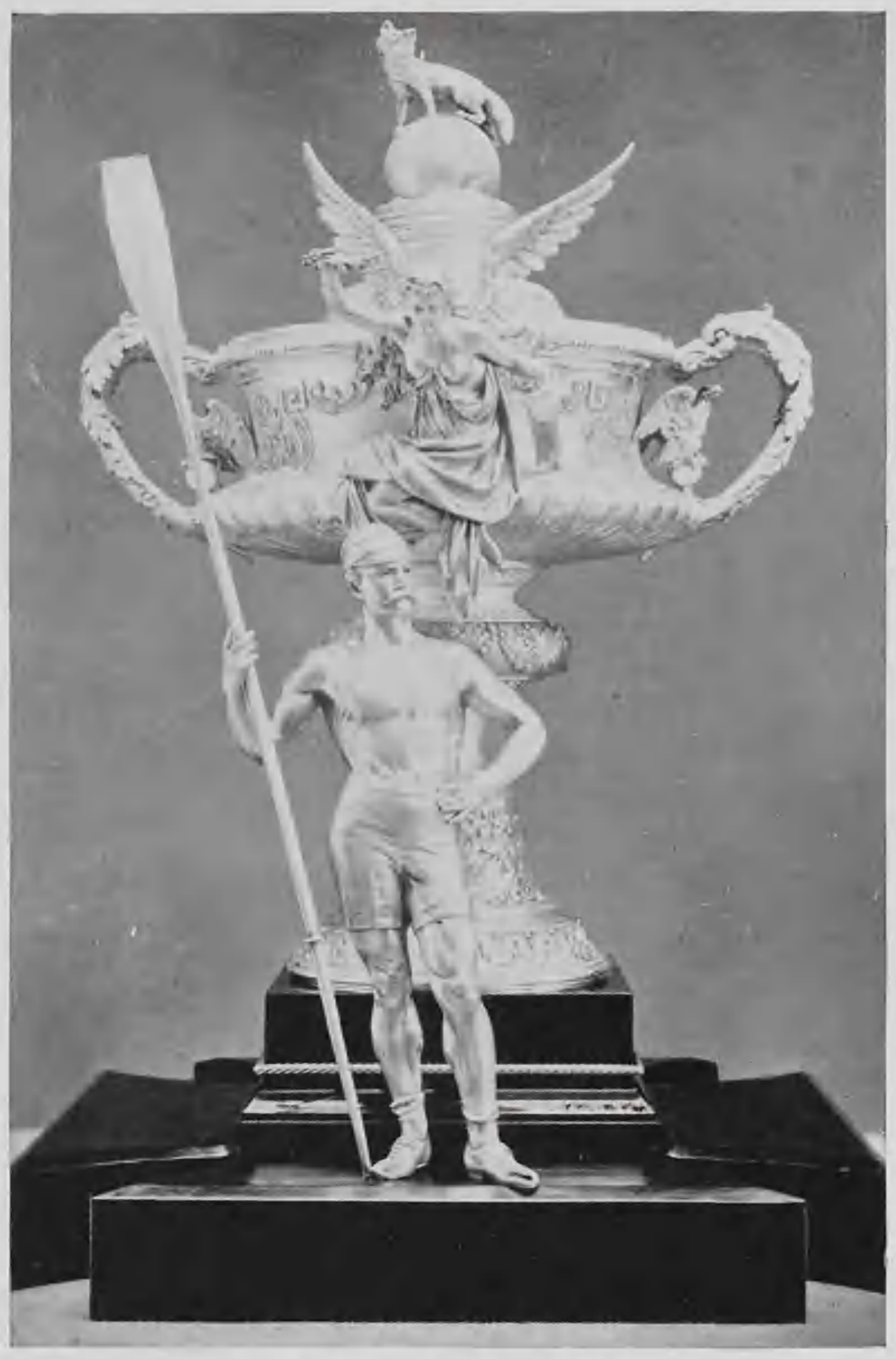
Of cut and engraved glass there are numerous specimens, one representing a new process in which glass of various colors is blown into a framework of silver or silver gilt, producing the effect of jewels, crystals, and precious stones. Of decorated glass and enamelled wares there are many and multiform articles, the first including tankards, pitchers, punch-bowls, jardinières, vases, and fruit dishes, and the second ornamental or toilet pieces, some of them of gold or silver, on which the enamelled paintings are set in rich but softly blended colors. Of Rookwood pottery, among the finest of ceramic ware, the specimens vary in shade from the lightest yellow to the darkest brown, a framework of silver displaying their tints in strong relief. In ecclesiastic metal work there is a large altar cross, heavily plated with gold and set with crystals, malachite, and precious stones, an alms basin and communion set of similar workmanship and design, a lecturn with figures of the evangelists, and a sanctuary lamp with angels bearing sacred emblems and on whose wings are richly jewelled crowns. Finally there is a paschal candlestick, eleven feet high and of gothic pattern, whose future home will be in St Patrick's cathedral, New York City. Of electro-plated goods there is a large assortment, such articles being made of nickel silver and finished with nicety and care before receiving their coating of the precious metal.

In the same pavilion, separated from the Gorham exhibits by a partition, is the collection of Tiffany & company; and it is generally conceded that both these firms have more than fulfilled the condition on which was assigned to them one of the places of honor—that they should furnish a display which would do credit to the nation and to themselves. The exhibits of the latter are valued at about $2,000,000, and include more than 1,000 pieces, most of them, except for articles of historic interest, prepared especially for the purpose. The so-called million-dollar case is well worthy of its appellation, for here is a collection of gems, singly and in com-


NAUTILUS PRIZE CUP

TIFFANY DIAMOND


DIAMOND NECKLACE



THE FOX PRIZE SILVER CUP

bination, such as seldom before was gathered in so small a space. Among the diamonds is one which, as it revolves above the remainder of the group on the golden rod which supports it, attracts almost as much attention as did the famous koh-i-noor at the London Exhibition of 1851. Somewhat larger than the latter, it weighs more than 125 carats, and represents the sum of $100,000.

EGYPTIAN MIRROR

But to many a still more attractive exhibit is a group of necklaces, valued at $335,000, composed of pearls of the purest water, and containing some of the largest and richest specimens in existence, one of them almost as valuable as that which Philip II of Spain presented to his daughter, Elizabeth of Austria. In another necklace are 42 brilliants, and in still another 550 rose diamonds, the latter with festoons and pendants, after the fashion of the Portuguese. There are also tiara necklaces, in aquamarine and topaz, each with nearly 2,000 diamonds, and representing what would seem the perfection of the jeweler's art. For a corsage ornament, the design of which is a network of maidenhair ferns, there were used 300 diamonds and 125 pearls. In another ornament, fashioned in the shape of a Spanish epaulette, and closely resembling in design a piece of old Spanish lace, are 1,000 diamonds, as many emeralds, and several yellow sapphires of brilliant lustre. A girdle of woven gold in arabesque style contains some 20 large canary diamonds of an average weight of 25 carats, and occupying a prominent place in the exhibits is a reproduction of the diamond collar worn by Marie Antoinette, from a portrait by Dronait in the South Kensington museum in London.

Other tiaras there are with wreaths of pearls and precious stones. In the centre of a diamond sun is a star sapphire of richest color, encircled with rubies, and with a serpent entwined amid the solar rays. A gold and diamond aigrette is set in a pear-shaped Peruvian emerald, its pattern suggested by the sea-urchin. Of floral designs there are several beautiful specimens, among them a Narcissus brooch, its stem of gold, its leaves of diamonds, and its flower of yellow sapphire, set at its outer edge with rubies. Another design is in the form of a spray of moss roses, with flowers of sapphires and petals of diamonds, and leaves and stems of demantodis.

Perhaps the most scholarly feature of the display is the exhaustive study here represented of the earlier artistic productions of European and Asiatic countries, as of Italy, France, Spain, Hungary, Russia, Hindostan, Egypt, and Japan, all these and other styles, some of them belonging to the fourteenth and fifteenth centuries, being either reproduced or suggested. Another feature is the careful and minute attention to detail, as in the Spanish

IN THE AMERICAN SECTION

SILVER EXHIBIT

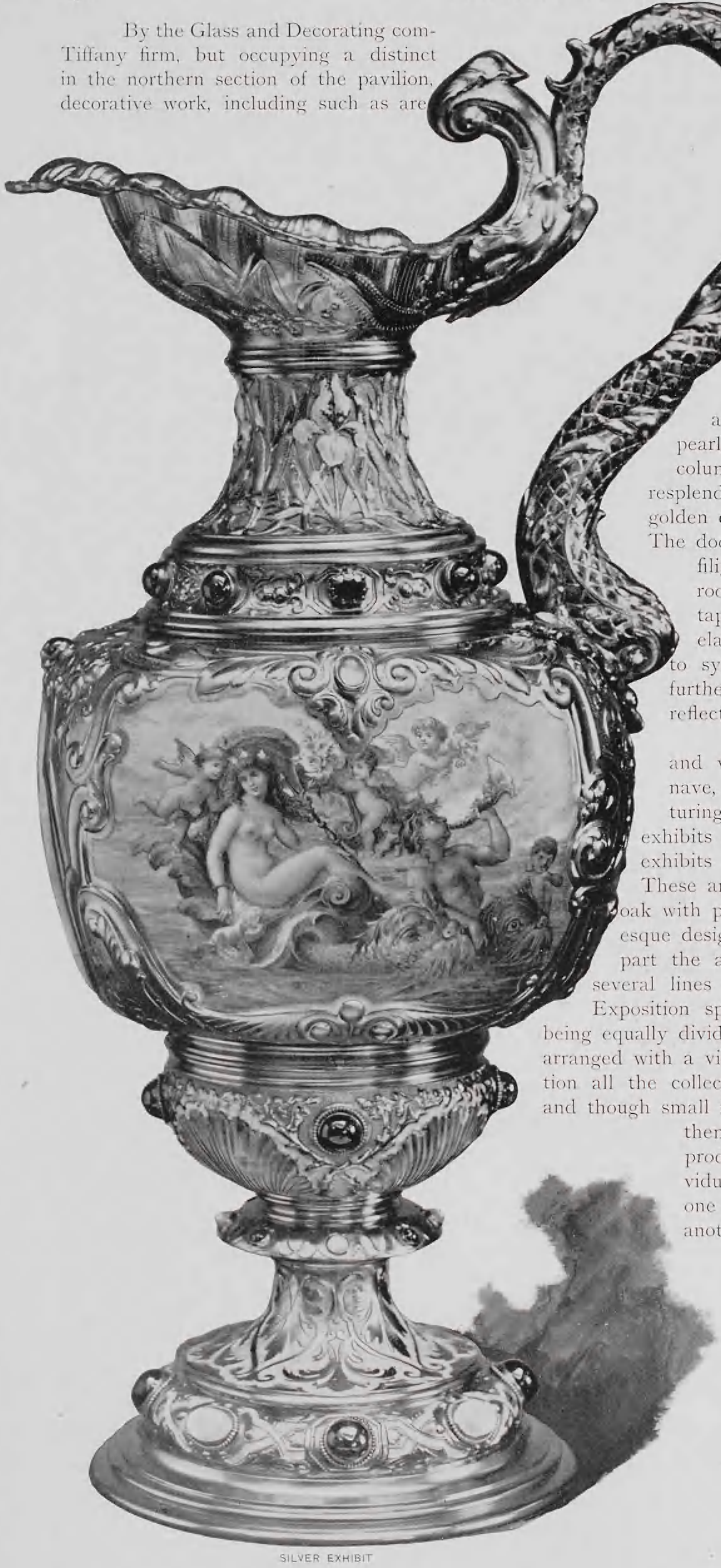
epaulette or shoulder ornament, where threads of lace are perfectly imitated, the ribbons grouped at the top, the entire ornament forming one mass of precious stones. So with the brooches, set with diamonds and colored with precious stones, simulating in miniature the fashionable bonnets of the first empire.

In the groups of fancy articles is almost everything that can be reproduced or ornamented with precious metals and precious stones, from a match-box to a magazine rifle, including frogs, toads, and reptiles, shaped as bonbonniéres and studded with turquoise and topaz. Prominent among them is a so-called incense-burner, but suggestive rather of the incense of tobacco, in the form of a rattlesnake coiled around the neck of a duck, both of life size and modelled from nature. The body of the snake is of silver, its rattles of pearls, and its scales of Queensland opals. At the corner of the pavilion stands a Pueblo vase, its design suggested by the pottery of the ancient cliff dwellers. At the top is a frieze of magnolias, and in a combination of silver, gold, nickel, copper, and enamel work are reproduced some of the characteristic flora of the south-west. A silver dinner service set of Indian chrysanthemum pattern contains 600 pieces, and a toilet table of the style of Louis XVI is fashioned of South American amaranth. Among other articles of historic interest is a collection of trophies, with prize and love cups, including the challenge cup of the steam yacht club, and one on which is portrayed in repoussé work a tiger hunt in a Bengal jungle.

By the Glass and Decorating company, bearing the name of the Tiffany firm, but occupying a distinct and separate field, are displayed, in the northern section of the pavilion, many modes and specimens of decorative work, including such as are intended for sanctuary use. In one of the chambers is represented the interior of a chapel in chaste and impressive design. In the vestibule is a statue of the virgin, amid altar lamps and richly jewelled vestments, and on stained glass windows are depicted the descent from the cross and other scriptural figures and groups, among them a reproduction of one of Bocatelli's masterpieces. The altar is of solid marble; in front of it are symbols of the evangelists wrought in pearl, and upholding the arch in its rear are columns of Venetian mosaic. The cross is resplendent with jewels, and on either side are golden candlesticks studded with precious stones. The door of the tabernacle is covered with gold filigree, gems, and mother of pearl. In other rooms are articles of furniture, drapery, and tapestry, many of them of novel design and elaborate workmanship, grouped with a view to symphony of color, the effect of which is further increased by rays of gold and emerald reflected from the ceiling.

East of the Tiffany and Gorham pavilion, and with a frontage on the central transverse nave, is the display of New England manufacturing jewellers, representing the collective exhibits of twenty-nine firms, and with individual exhibits by a few of the larger establishments. These are contained in a tier of cases of polished oak with plate-glass panels, an arch of oak in picturesque design extending over the aisle. For the most part the articles are such as are produced in their several lines of trade, and not as at the Centennial Exposition specially made for the purpose, the space being equally divided among the exhibitors, and the groups arranged with a view to harmony of effect. With one exception all the collections are from Providence, Rhode Island, and though small in size they are choice in quality, many of them representing special lines of goods in the production of which single individuals or individual firms have millions of dollars invested, one for instance making a specialty of rings, another of watch chains, and another of trays in various patterns. While singly such exhibits would not be of special value, together they form a most interesting display, illustrating as they do the remarkable progress in this direction since the date of the Centennial Fair.

Returning to Columbia avenue, we find, adjacent to the Tiffany and Gorham edifice toward the north, the neat and tasteful structure of the Meriden Britannia company, its rich brown hues of rosewood contrasting



SILVER EXHIBIT

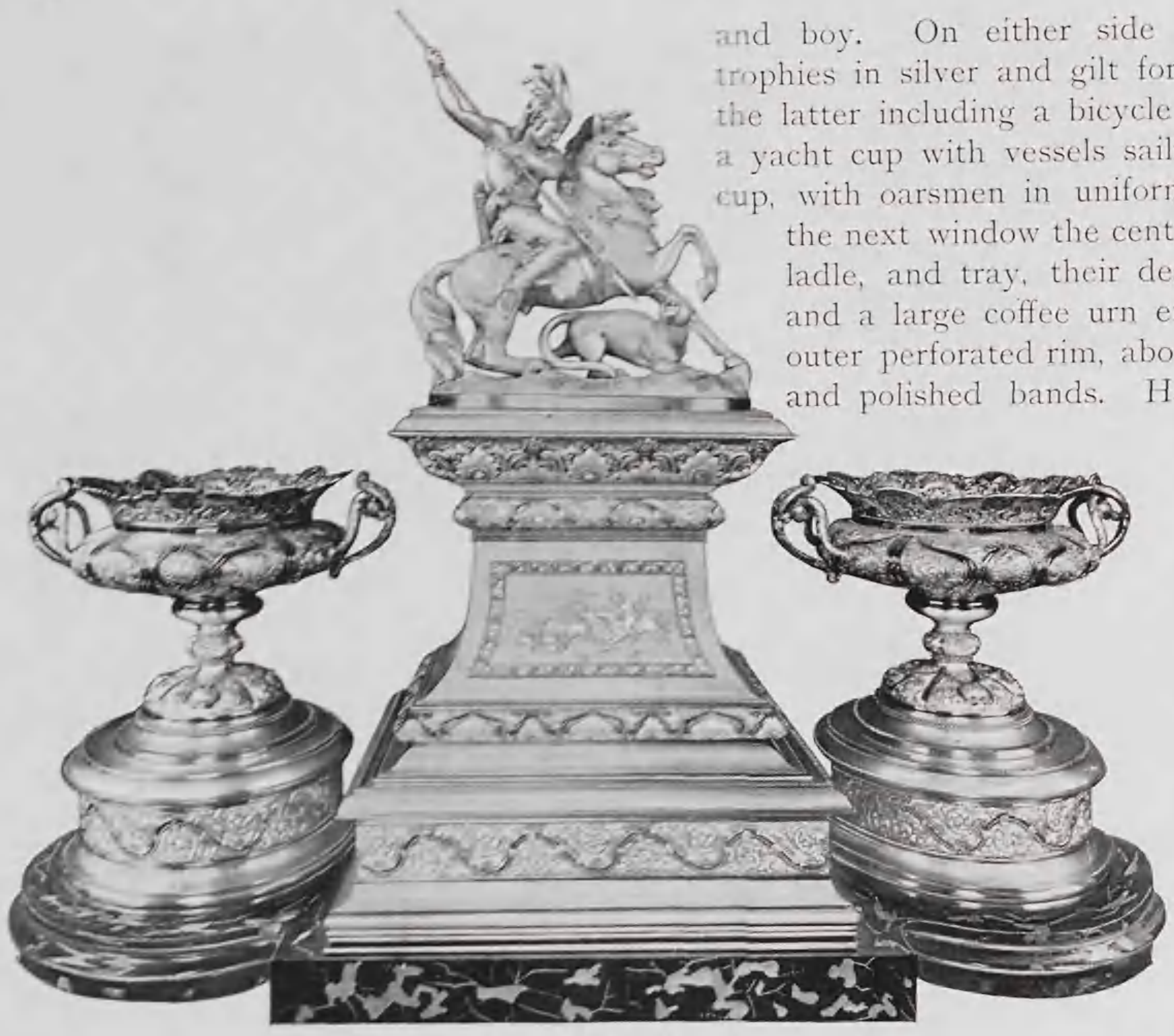
AMERICAN FLORAL TEA TRAY

somewhat sharply with the cream and gold of the latter. In shape it is octagonal, its sides, except for the one which contains the portico, consisting of plate-glass windows, resting on a curved base, divided by double Corinthian columns, and surmounted by low domes, the domical treatment culminating above the roof. Passing between rich draperies into a pavilion some thirty feet in diameter, its woodwork of ivory and gold, with easy chairs and carpet of light blue velvet, we find at the entrance a centrepiece of elaborate workmanship, its base of silver molded with gold and with bands of gold and chrysanthemum. Above this are portrayed in relief scenes of Indian life, with men on horseback chasing a herd of buffalo, a deer lying prostrate among a group of braves and children, and a floral design extending to the top, where is the figure of a warrior mounted on a plunging and frightened steed, with spear outstretched above a crouching panther. In an octagonal case, resting on a pedestal of ivory and gold, are many specimens of novel pattern. Next to it is the company's office, near which is a triplicate mirror, the central glass with scroll work and flat mold frame, and those at the side with a heavy framework of oxidized silver. At the other side of the pavilion is a large mahogany chest, lined with chamois leather, and containing several hundred pieces of the Savoy pattern, many of novel and original design.

SILVER VASE

CUT GLASS

Turning to the display windows we find in one adjoining the portico a decorated vase with blossoms, flowers, and leaves of chrysanthemum. At its base, where also are rich designs in flowers and fruits, silver buffaloes are pawing the ground, as though challenging each other to combat. The body of the vessel is richly ornamented, and on its branching arms, the spaces between filled in with scroll work, are seated an Indian maiden



SILVER WARE

and boy. On either side of this centrepiece are trumpets and trophies in silver and gilt for presentation purposes, the largest of the latter including a bicycle cup, with costumed rider at his wheel, a yacht cup with vessels sailing through a silver sea, and a race-cup, with oarsmen in uniform, and with golden oars in hand. In the next window the centrepieces are a punch-bowl, with goblets, ladle, and tray, their design skilfully blended in silver and gilt, and a large coffee urn encircled with columns which support its outer perforated rim, above it being a circular top with engraved and polished bands. Here and in other windows are flower-bowls, cake-baskets, liqueur sets, tea-sets, lamps, candelabra, toilet sets, writing tables, waiters and trays, chafing dishes, fern bowls, and scores of other articles. Finally, on a curved and velvet covered surface in the northern window, is almost every kind of flat table ware in use at the present day.

Other attractive exhibits in the line of silver-plated ware are those of the Pairpoint Manufacturing company, contained in their white pavilion reproducing in miniature a Grecian temple of the Ionic order, with the Erectheum as the motif of the design. As to pattern, workmanship, and elaboration of decorative features, their collection forms a most creditable display. Worthy of note are their massive silver epergnes, one of them five feet high, their gold tea-sets, their silver lamps, with decorations suggestive of the colonial period, their trays and table-ware, all of them richly enamelled. Pleasing in effect is the Royal Flemish ware, tastefully illumined, and no less admired are the prize cups with their rich ornamentation; the gold and silver goblets, nut bowls, and a variety of other articles, the makers of which are favored with a location in close proximity to some of the most famous firms of the old world.

In the line of silver and plated ware, jewelry, diamonds and watches, Missouri is represented by the

GLASS AND GOLD

SILVER PUNCH BOWL

PLATED WARE

SILVER WARE

exhibit of the Mermod and Jaccard company of St Louis. For this, the pioneer firm in supplying first-class goods to the country west of the Missouri, it is claimed that the jewelry trade of the west has been revolutionized through its operations. Be this as it may, there can be no question as to the quality of workmanship displayed in its handsome pavilion, furnished, draped, and equipped so as to represent the historic era with which the earlier annals of St Louis are connected. So also with the exhibits, specially prepared for the occasion, and designed after the finest specimens of French art work, from the days of Louis IX, after whom the city was named, to those of Louis XV, in whose reign it was founded.

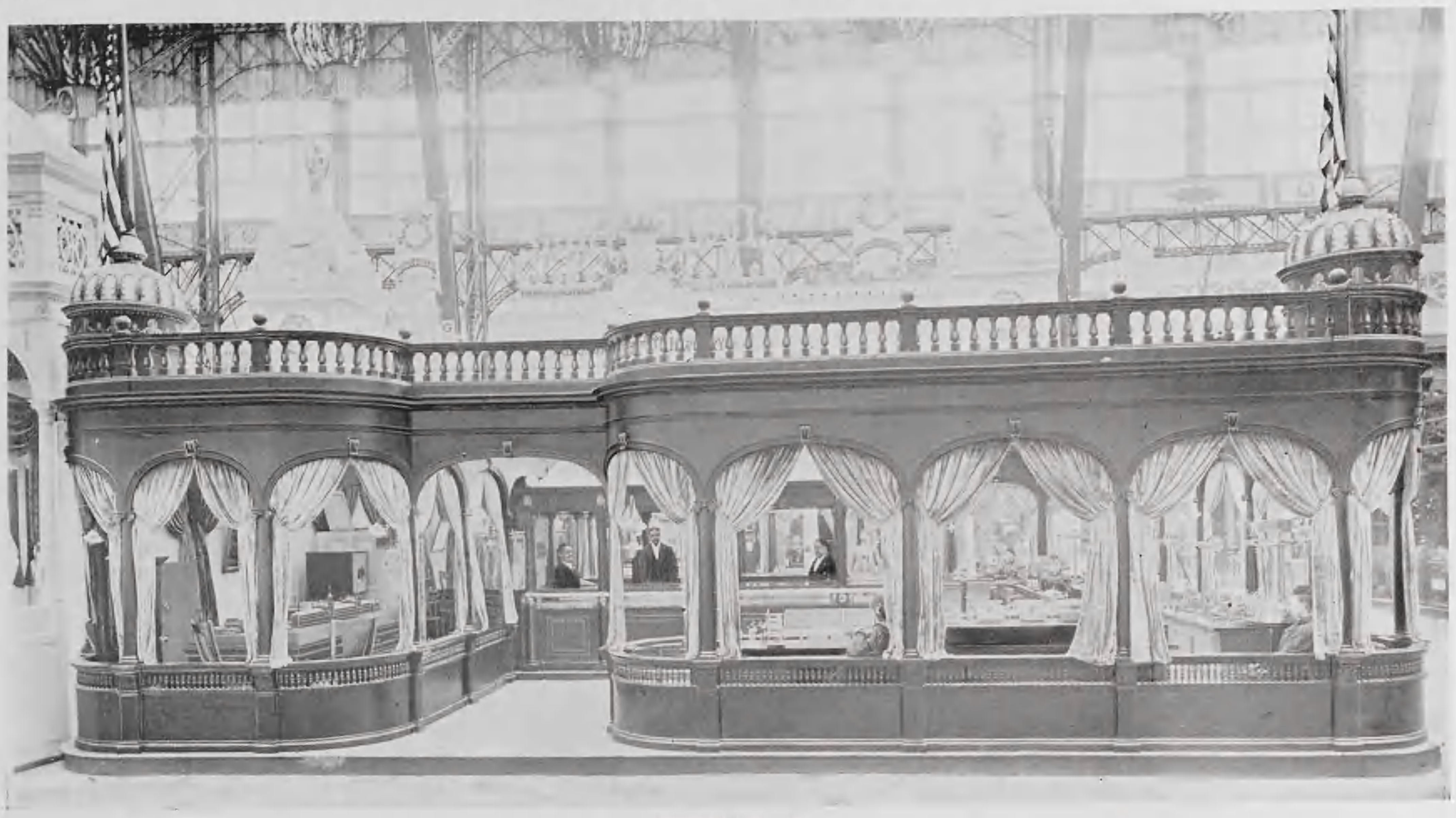
Among other creditable exhibits included in this group are those of the Manhattan Plate company of Lyons, New York, of a Bridgeport company, whose specialties are in the line of silver inlaid spoons and forks, and of gold and silver plated table ware, and of a Waterbury firm whose goods are for similar uses. Nor should we omit what Chicago has to show us, one of her exhibitors displaying catholic church decorations, and another, plated ware in gold and silver, and silver plate. Two Cincinnati companies also display church ornaments; from Boston and Newark are minor exhibits; from Freeport, Illinois, are specimens of silver filigree goods, and from Buena Vista, Colorado, come roses fashioned of purest silver.

Adjacent to the prominent jewelry pavilions and separated by a transverse nave is the department of horology, its exhibits classed, with slight exceptions, in a single group. Here is one of the most interesting features of the Fair, a collection of historic and antique watches, loaned for its present use by Evan Roberts of Manchester, England, to the American Waltham Watch company. Of sixteenth century watches there is one made by Jeubi of Paris for Queen Elizabeth; there is the hour-striking timepiece which Calvin carried, the watch with a seconds hand on its dial, by which Bunyan marked the slow flight of time in Bedford jail, and that which on a February day of 1554, recorded all too quickly the approaching hour of the doom of Lady Jane Grey.

The oldest of the seventeenth century specimens is a metal-cased alarum watch fashioned, about the year 1610, by David Ramsey of London for the monarch whom his detractors dubbed the wisest fool in Christendom. Next to it are those of Oliver Cromwell and his Latin secretary, the blind author of the *Paradise Lost*, who learned by touch the hour of day from raised points on the dial of his timepiece. An astronomical watch, with shell enamelled case was the property of Sir Isaac Newton, and at its side is the cyclometer used by George III to measure the distance covered by his carriage. In a triple metal case, bearing the date of 1771, is the watch of Robert Burns, the shell-cased watch of William of Orange, and

WATER PITCHER AND GOBLETS

BLACK SILVER COFFEE POT


WALTHAM PAVILION

the silver-cased timepiece presented by Lord Nelson to Captain Rose, completing the treasures purchased by their owner from the Roskell collection at Liverpool, where for more than a century had been their home.

Of antique watches there are more than 600 specimens, several belonging to the sixteenth, many to the seventeenth, and the remainder to the eighteenth centuries. Here the horologist may linger over a collection of curiosities second only in interest to the one already described. On the dial of a skull watch of early seventeenth century make is an engraving of the day of judgment. Of eighteenth century watches there is the first one made with lever escapement, and not a few have gold or gold and enamelled cases, set with rubies, turquoise, and pearls. To the same period belong several cylinder musical watches, the first made with gold hair-spring, one of the first with detached lever, the only one made by the hand of woman, with leathern cover and enamelled dial, a chronometer watch belonging to the king of Spain, and a verge timepiece with the inscription on its inner case, "Louis XIV, mort en MVCCXV."

The exhibits proper of the Waltham Watch company consist of their various articles of manufacture, and except for a model of their works were not specially prepared for the occasion. For the most part it is restricted to watch movements, of which there are more than 2,000 varieties, the company having ceased to manufacture, as in former years, the completed timepiece. There is, however, a handsome piece of mechanism in the form of a watch made of quartz and agate, except for the wheels, which are made of the usual watch materials. It is valued at $1,700, and can be illumined by electricity so as to reveal the workings of every part. Along two sides of the pavilion is a range of machinery in motion, demonstrating the advancement made in the methods of watch manufacture from the days of the Centennial Exhibition to the present time.

CARVED CLOCK

CLOCKS

The company claim to be the originators of what is known as the American system of watch manufacture, whereby machinery is used for the work which was formerly done by hand. To illustrate the progress in this direction, the machines here in operation are similar in construction, but run with a minimum of operatives. There was formerly, for instance, one operator for each machine, where now is a combination of four machines in charge of one person, who can take care of six of these combinations, doing the work of twenty-four persons, and in many respects doing it better. Another machine is of different plan, and instead of handing the work from one to the other, turns round and brings the completed work to the operator, then is re-filled and starts on its round again. In all these machines it has been demonstrated that they can perform the work of that part of a watch which requires the utmost delicacy of touch, and which it was thought until recently could only be done by hand.

CEILING OF ART FURNITURE PAVILION

Another illustration of progress in the manufacture of American watches within the past few years is furnished by the Waterbury Watch company, whose pavilion, with its Moorish outlines and colonial coloring, is one of the landmarks of the horological section. In the interior are displayed to excellent advantage the various products of the factory. In hectagon cases, with revolving centres, at the bottom of each of the towers are shown gold-filled watches in various colors; likewise a large collection of silver and nickel cased watches, of which there are between four and five thousand. With much taste is also arranged a variety of plain and colored enamelled dials. But the crowning feature of the display, and forming one of the principal attractions of the Manufactures building, is the famous Century clock, which stands in the rear of the pavilion. It is contained in a large case of black walnut, polished and adorned with figures representing American history from the days of Columbus.

To the pavilion of the Self-winding Clock company of New York was assigned a liberal space in the horology department. Here is another remarkable clock, by which are controlled all others in the Exposition, together with the thousands of clocks elsewhere connected with the company's time service. At about eleven by Chicago time, the hour of noon in the city of Washington, is rung each day on a chime of bells

DRESS GOODS

at a signal from the naval observatory at the national capital. Electric chiming apparatus and clocks also give forth their music at intervals. There are so-called programme clocks by which signals are given for starting trains and for ringing bells at stated intervals where needed, as in school and college class rooms. There are other time-keeping and time-transmitting devices of cunning mechanism, and on the walls of the pavilion are scores of self-winding clocks, their construction and workings displayed in a single time-piece wound up once a minute. By Sir Isaac Newton it was said that the secret of perpetual motion would some day be discovered by a fool. Let the clock men and the electricity men look to their laurels.

Of other companies and firms in this department my limited space forbids other than passing mention. The Ansonia and Geneva Clock companies of Chicago, the Cyclo Clock and Non-Magnetic Watch companies of New York, and the Keystone Watch-case company of Philadelphia have all furnished creditable exhibits. Nor should we omit the Philadelphia firm of H. Muhr & Sons, among whose display of watch-cases is the largest gold thimble ever made, and at its side, the smallest silver thimble, fitted for Liliputian fingers. In some of the exhibits, as also in the jewelry section are specimens of regalia, including the uniforms, vestments and badges pertaining to military, benevolent, and secret civic orders affording a very interesting display. By the Henderson Ames company, for instance, are represented on dummies the uniforms of hussars, of the masonic order, of the knights of Pythias, the Eastern star and shrine, and the daughters of Rebecca, the last in robes of purple and gold.

Of cottons, linens, and other vegetable fibres, all classed under a single group, and forming with silks and woolen goods in the groups adjacent the main display of textile fabrics, there are sixty-six exhibitors. Beginning with yarns and twines, the cotton collection includes all the usual classes and grades, the New England factories contributing the bulk of the display, though Philadelphia mills are liberally represented. Apart from that city Pennsylvania has but a single exhibit. Of New York mills there are three, one producing printed cottons, another cotton lace curtains, and a third miscellaneous articles. The south and west have each but one exhibit, the former from Trion, Georgia, and the latter from Chicago.

COLLARS AND CUFFS

CLOTHING

COLUMBIAN FOUNTAIN AND MANUFACTURES BUILDING

While to the casual visitor our textile fabrics are not the most attractive features of the American section, there are several booths before which the passer-by is apt to linger. To the more thoughtful observer, not only to the cotton manufacturer or merchant, but to all who love to note and study the industrial progress of the United States, there is much of interest in these plain unpretentious groups, where, as I have said, the ornamental has in a measure been sacrificed to the utilitarian. Here is represented in this direction the outcome of a century's growth, for about one hundred years ago was erected in Rhode Island the first of New England cotton mills. Here we have almost the inception of American manufactures; for apart from such as were intended solely for domestic use, little was accomplished in this direction until more than a decade after the close of the revolutionary war. Saw-mills, grist-mills, and tanneries there were, and during the later colonial period iron was largely produced in New England and other districts; but the restrictive policy of the mother country, almost as rigid as that which lost to Spain her New World empire, choked many a promising branch of enterprise. For years after independence was achieved, agriculture and stock-raising were the mainstay of the young and struggling states, impoverished by one of the most cruel wars recorded on the page of history.

FURNITURE

In the closing years of the eighteenth century, the United States, which in 1892 produced cotton fabrics worth hundreds of millions of dollars, were but just beginning to work their raw produce with machinery, of which models had been secretly obtained from England in evasion of her penal statutes. In 1800 the little Rhode Island factory still represented alone this branch of industry, using but a few thousand pounds a year of cotton yarn; but in the following decade remarkable progress was made. In 1806 there were fifteen mills at work, twelve in Rhode Island, two in Massachusetts, and one in Connecticut, consuming in all a yearly total of 300,000 pounds of yarn. By 1810 the number of factories had increased to nearly one hundred, with more than 70,000 spindles in operation, and five years later the consumption of raw cotton had increased to 90,000 bales, with an invested capital of $40,000,000 and 100,000 operatives, of whom ninety per cent were women and children. The duty on imported cottons was 27 per cent, and for many years remained at about that rate, the volume of manufacture increasing rapidly until the civil war. After the close of that episode the output continued to increase, though with some fluctuations, especially after the financial crisis of 1873. For 1890 the cotton crop of the United States exceeded 3,600,000,000 pounds, of which more than two-thirds was exported, less than 1,200,000,000 being used by New England and other mills. Great Britain was our principal customer, taking nearly one-half the entire crop; but sending us in return, notwithstanding our protective tariff, a larger quantity of manufactured cottons than we ourselves export to all foreign lands. Such in brief is the history of one of the leading industries of the United States, representing as illustrated at the Fair, an annual production of $350,000,000 or more of fabrics made entirely of cotton, or with but slight admixture of other substances. As to the possibilities of this industry, it need only here be mentioned that at the opening of the civil war the manufacture of cotton had realized for British mill-owners

MOSAICS

ROCHESTER LAMP PAVILION

a profit of $5,000,000,000, almost entirely from raw material imported from the United States.

Of silks there are manufactured in the United States more than in any country in the world, with the single exception of France, which produces nearly one-third of the total supply of silken fabrics. Early in the seventeenth century raw silk was produced to a small extent in Virginia, and it was largely with a view to encourage this industry that James I published his famous *Counterblast* against tobacco, urging instead the cultivation of silk, offering bounties for its production, and making compulsory the planting of mulberry trees. But all in vain. The colonists would neither toil nor spin to please their monarch, but to make money for themselves, and that which made the most money was tobacco. It was not until more than a century later that the first package of colonial silk was taken to England by the founder of the state of Georgia, and there fashioned into a dress for Queen Caroline. In 1750 a small factory was built in Savannah for the reeling of silk, and for twenty years afterward exports averaged some 500 pounds a year. The little that was produced during the revolutionary era passed into domestic use, and after the close of the war sericulture vanished from the land, soon however to be renewed on a larger scale.

In 1810 skein and spool silks were first made by steam power, and two or three decades later the production of raw and manufactured silks became one of our leading industries. Largely through the efforts of one Peter S. Duponceau societies were formed, books were published, and new machinery introduced; public interest was aroused, and the subject brought before the attention of congress. Presently the interest developed into enthusiasm, and the enthusiasm into mania, followed by wide-spread ruin and collapse. Thus cuttings of the Chinese mulberry, introduced for their rapid growth and abundant foliage, were worth in 1839 more than their weight in silver, in the following year they were unsalable. Meanwhile, however, manufactures were steadily increasing, the raw product being largely imported from China and southern Europe. For a time they were mainly restricted to sewing-silk, dress-trimmings, and ribbons, and it was not until 1855 that the first spun silk was made. During the war this industry grew apace, fostered by a protective duty on fabrics and the free admission of material, Paterson, New Jersey, alone having nearly fifty factories, with many

LAMPS AND BRONZES

TRUNKS

ANTIQUE FURNITURE

others in the middle and New England states. At the Centennial Exposition the home display of dress silks, in many colors and designs, rivalled, and as some would have it, excelled the French exhibits. For 1876 our production of silk goods was valued at about $20,000,000; by 1880 it had increased to $34,500,000, and for 1892 was probably not less than $60,000,000. Nevertheless we continue to import very largely of foreign silks; for that a dress should be cut from home-made silk, or contain even home-made trimmings or home-made buttons is something that the world of fashion has not yet learned to tolerate.

Of the progress made within recent years in quality no less than in quantity, we have sufficient evidence in the exhibits of silk and silken fabrics contained in the hall of Manufactures. While of smaller size than its adjacent sections devoted to cotton and woolen goods, this collection is grouped in more artistic fashion and is no less comprehensive than either. Beginning with raw silk as reeled from the cocoons, we have the thread in skeins or on spools. There are plain and figured silks, woven and printed, with satins, velvets and serges, ribbons of many patterns, trimmings bindings and braids, crapes and gauzes, cravats and scarfs, handkerchiefs and hosiery, laces and veils, and whatever else is made or partly made of silk contributing to the display.

More than forty exhibitors are represented in this collection, some by a single line of goods, as dress-silks, trimmings, or ribbons, and others by several lines. Of these nearly one-half are New York manufacturers, whose wares consist largely of dress-silks, ribbons, and trimmings. Paterson, still termed the Lyons of America, has but three exhibits, one each for its dress silks, ribbons, and braids, with four others in New Jersey for similar classes of goods, mill-owners showing a disposition to remove to New York where skilled labor is more abundant. Four Philadelphia and as many Chicago firms represent various kinds of fabrics, as do the Connecticut and Massachusetts factories, which complete the list.

PAPER

By a Chicago company an exhibit is made beginning with the egg of the silk-worm, the worm itself, the moth, and the cocoon, and thence passing through various stages to the finished fabric. Another interesting display is in the form of a railroad train, constructed of eight thousand spools of silk, its wheels in black, the bell of its locomotive in gold, while from the smoke-stack floss silk issues in colors shaded from black to white. By other Chicago factories, and by several New England mills, are creditable exhibits of dress goods, serges, hosiery, braids, linings, mittens, and other miscellaneous articles.

A PAPER PAVILION

The exhibits classed under the headings of "woven and felted goods of wool and mixtures of wool" form one of the largest groups in the hall of Manufactures, with 110 exhibitors, and with additional exhibits in the gallery, to be mentioned later in this connection. Included in this section are woolen yarns, blankets, robes, and rugs, doeskins, cassimeres, and broadcloth, cloakings, flannels, and dress goods for men and women; these are all of wool, but some of them repeated in other classes in the form of worsted goods or admixtures of wool and cotton. There are felt goods in many varieties, from women's hats to rubber shoe linings; and there is a large assortment of small wares, as bindings, beltings, and braids, fringes

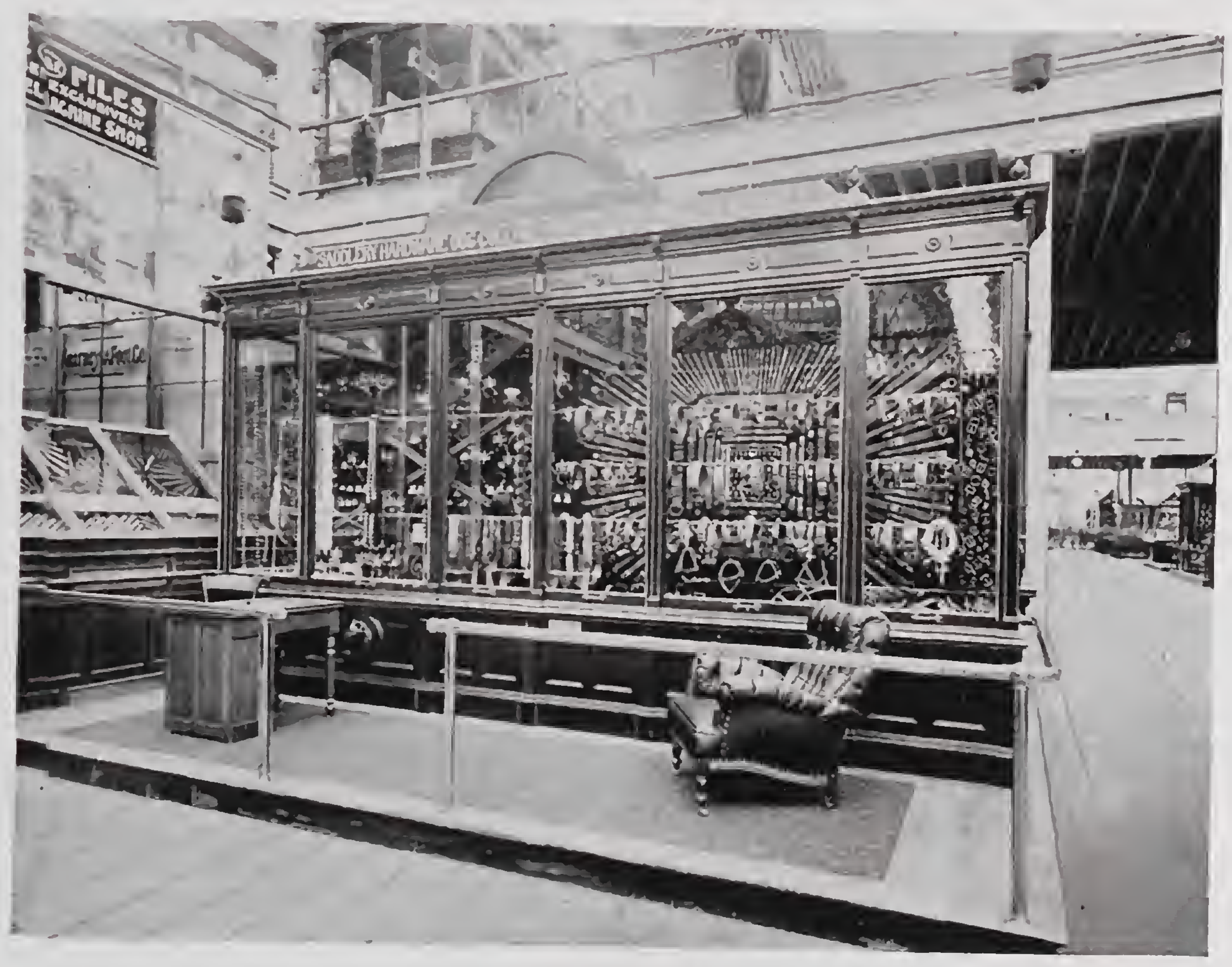
STOVES

and gimps, cords and tassels, dress trimmings and embroideries.

Of the products of New England factories, or of the mills of Pennsylvania or New York, it is unnecessary here to make other than passing mention, for since the earlier years of the present century these mills have supplied, as still they do, the bulk of our woolen fabrics. By one of the Rhode Island establishments are displayed, with many improvements and additions, some of the same classes of goods that were made when the mill was opened in 1801, while a New York mill shows the progress achieved in quality of fabrics since it was first set running in 1836, when our entire production of woolens was less than is now manufactured in many a New England town. Apart from New Jersey and the states and sections mentioned, our woolen industries are but scantily represented at the Fair, through lack of space rather than from indifference. The Pacific west, for instance, with a score at least of mills and an output valued at several million dollars a year, has only two small exhibits, one each from Denver and Oregon City. The nearer west is somewhat better represented, Wisconsin having four exhibits and Illinois three, with one each for Minnesota, Michigan, Mississippi, Indiana, and Ohio. The entire south has but a single display, that of a factory at Charlottesville, Virginia, working mainly on goods for military and civic uniforms, by which were made the coat cloths of the Columbian guards.

Thus it will be seen that our woolen industries are spreading throughout the west, though probably not one-third of its mills are represented at the Fair. If as yet they do not compete largely with eastern mills, they threaten to do so at no distant day. Wisconsin, for instance, has an excellent display of yarns and fabrics, while the blankets, robes, and shawls of a Minneapolis factory are rich in color, soft of texture, and as to face and finish will bear comparison with those of eastern make. Among the communities of the Pacific coast, with their more expensive labor and fuel, the pressure of eastern competition is more severely felt than in mid-continental states. Of their enormous wool-clip, not more than one-fourth is utilized by local factories, and still, as in former years, they are content to pay freight on the remaining three-fourths, together with the refuse which it contains, repurchasing perchance a considerable portion in the shape of finished fabrics, with all the added charges of manufacture, commission, and carriage.

Notwithstanding over-production and glutted markets the woolen industries of the United States have developed within recent years with a steady and permanent growth. From $300,000,000 in 1880 the value of output increased to about $400,000,000 in 1892, and against 180,000 operatives in the former year there were probably 250,000 in the latter,



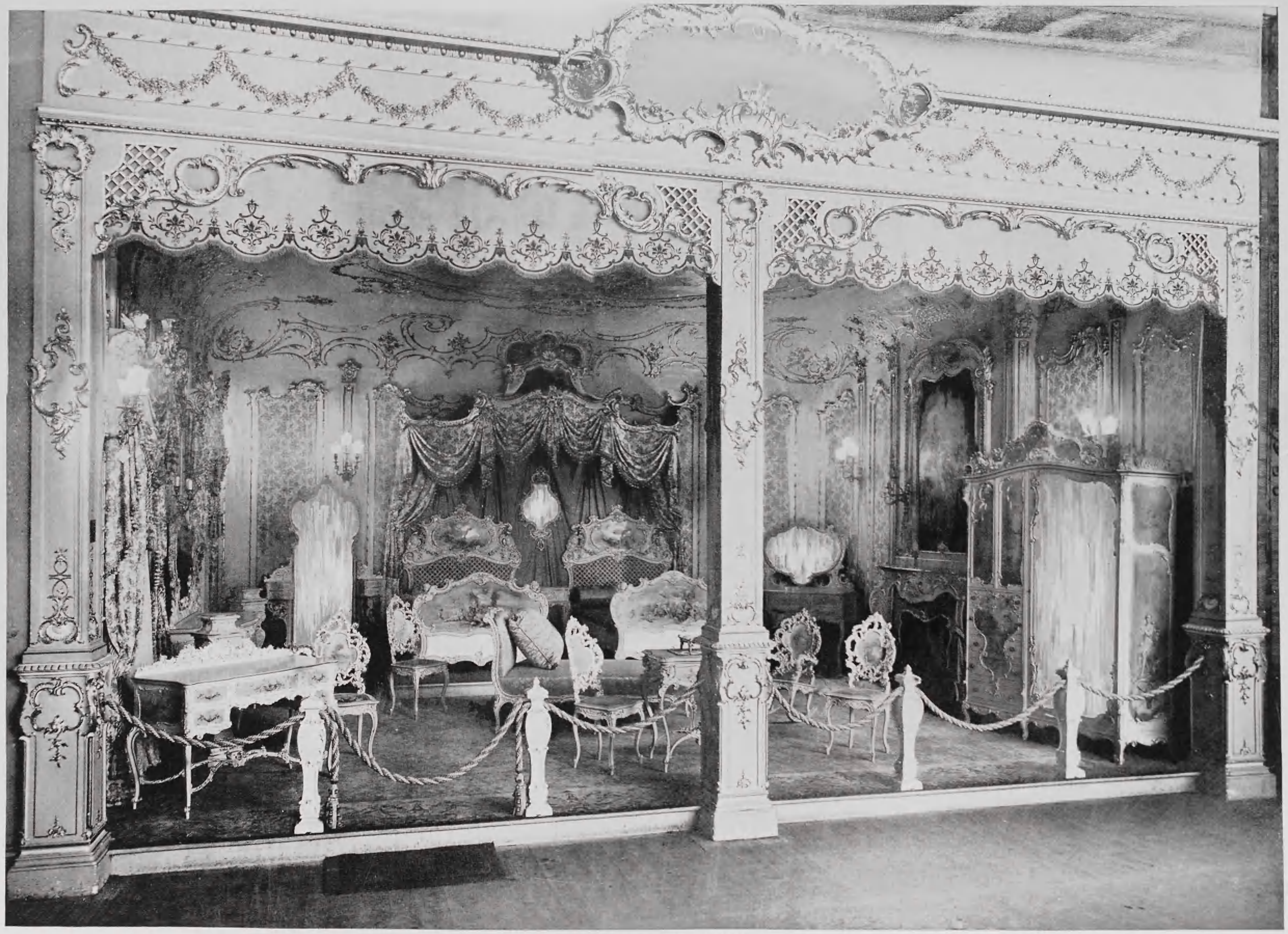
SADDLERY HARDWARE

this being the largest number employed in any branch of manufacture, except for cottons and ready-made clothing. Meanwhile a considerable decrease in the number of factories indicates a growing concentration among the larger establishments; nor is this to be wondered at when we consider that even under the most favorable circumstances our woolen mills do not return on an average more than six per cent on the invested capital, and that in seasons of extreme depression they must either be closed or run at a loss.

Of ready-made clothing our home manufactures represent an annual valuation of more than $300,000,000, and a distribution in wages of about $70,000,000. As to what has been accomplished in this direction, specimens may be seen in the clothing and costume section of the textile groups, though in common with some other classes of textiles, as jute and ramie fabrics, laces, embroideries and trimmings, including also oil-cloths and articles made of asbestos, most of these exhibits are contained on the gallery floor. A somewhat remarkable display is that of a so-called Sanitary Woolen System company, for whose wares, in the line of knit-goods and hosiery, it is claimed that precautions as to materials, process and pattern guard against danger to bodily health.

AN ELECTRIC FOUNTAIN IN ACTION

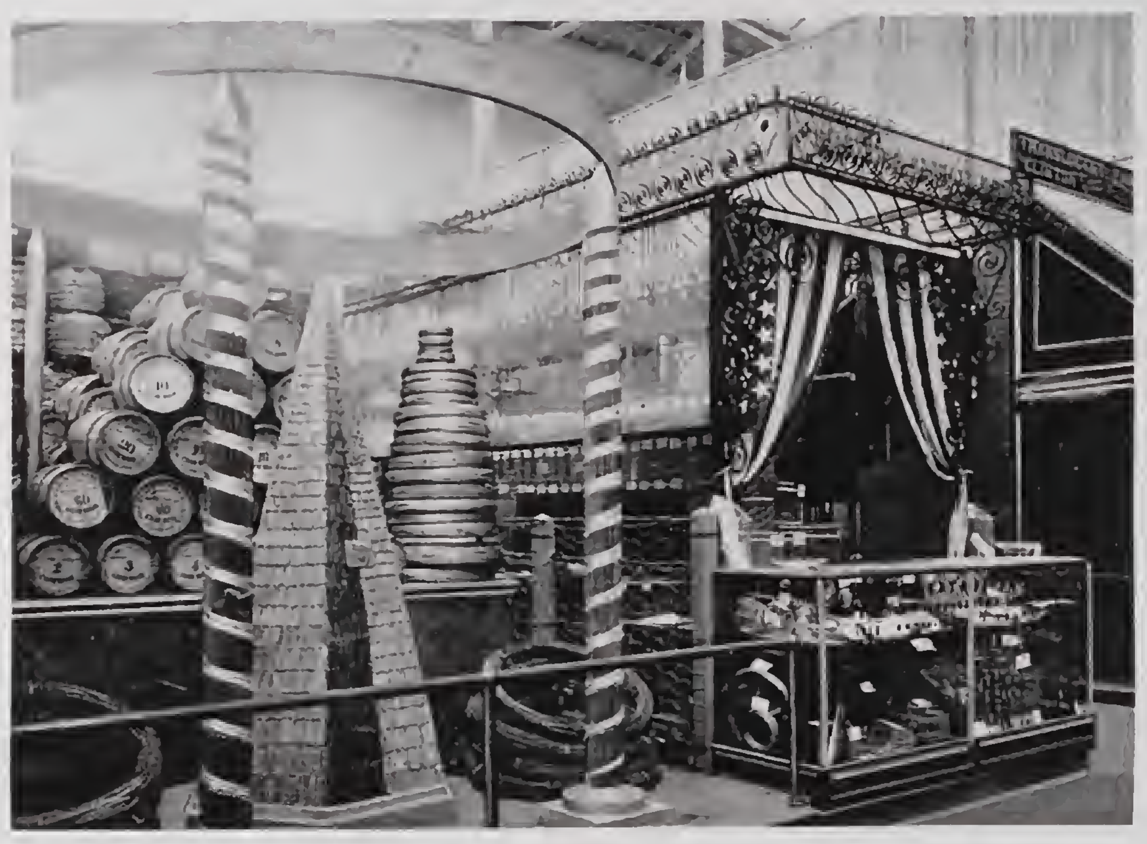
The remaining space in the northeastern quarter of the Manufactures building is devoted to exhibits of furniture and interior decorations, gas and lamp fixtures, wall papers, enamelled ware, sanitary, heating, and cooking apparatus, refrigerators and cutlery. The decorations of wall and ceiling, the draperies of bed and mantel, the artistic treatment of doors and windows, halls and staircases, are object lessons which the home-loving world, especially the female portion thereof, is not slow to comprehend, and perhaps no portion of the Fair exhibits is examined with closer criticism. In some of these pavilions there is nothing to indicate that their contents have been arranged with a view to securing purchasers; they rather resemble boudoirs in which silk and satin draperies and canopies draw attention from the more solid specimens of workmanship. This may be noticed in the exhibits of several firms whose specialties are in the line of metallic bed-



PAVILION SHOWING LOUIS XV FURNITURE

steads, prominent among which is that of the Whitcomb factory, while others are filled with goods intended merely for personal or other ornament, as with a New York firm which makes an elaborate display of flags and banners, church vestments and regalia.

Elsewhere in this section is an example of the subdivison of the business of interior furnishing and decoration. First there are makers and importers of barbers' supplies, one of the firms providing elaborate furniture in this line. Others there are whose specialties are saloon and billiard fixtures, a New York company showing a complete bar-room, with floor of tiling, walls lined with mirrors, and a rich array of glass ware on the side boards. A Chicago firm has a choice display of billiard and saloon furniture, and the Brunswick-Balke-Collender company, has, in addition to its costly tables and apparatus, a collection of ivory in its natural state, including two immense Zanzibar tusks, and the cavernous skull of the elephant from which they were taken. Among other specialties there is a pavilion in which are displayed the cactus in its several stages of growth, together with the articles made therefrom, as tables, stands, easels, frames, mantels, music racks, inkstands, napkin-rings, and canes.



WIRE

It is not unusual in these days for housekeepers to discard woolen or other carpets, rugs, and textile hangings, covering their floors and walls with the parquetry goods now largely manufactured in this country. To a certain extent these goods are recommended by physicians for use in floors, wainscotings, walls, and ceilings, on the ground that pure, clean woods do not convey impurities and disease germs, nor aggravate troubles of the throat and lungs. One of the most extensive manufacturers of this line of goods is a Philadelphia firm, whose pavilion is a striking display of elaborate and rich designs in inlaid woods. As a centre for the manufacture of general household furniture, Grand Rapids has a well deserved reputation, and among the best exhibitions is that of one of its furniture companies, while among the largest is the collection of a Chicago firm.

Of lighting apparatus there are many varieties and designs, from coach lamps to massive chandeliers and candelabra, brass and iron lamps for use in private dwellings and pleasure grounds, and all the modern appliances evolved through the discovery of electricity as a lighting agency. These are displayed in dozens of pavilions, prominent among which is that of the Rochester Lamp company, opposite the French section. Among its collection of metal and porcelain lamps, covered by airy shades of silk and lace, is the one for which was awarded a medal at the Paris Exposition of 1889; but even this does not compare with a score of others. Near one corner a huge buffalo's head is overshadowed by a large lamp of exquisite workmanship. Another attractive display shows the roof and sides of the pavilion constructed of richly colored stained glass.

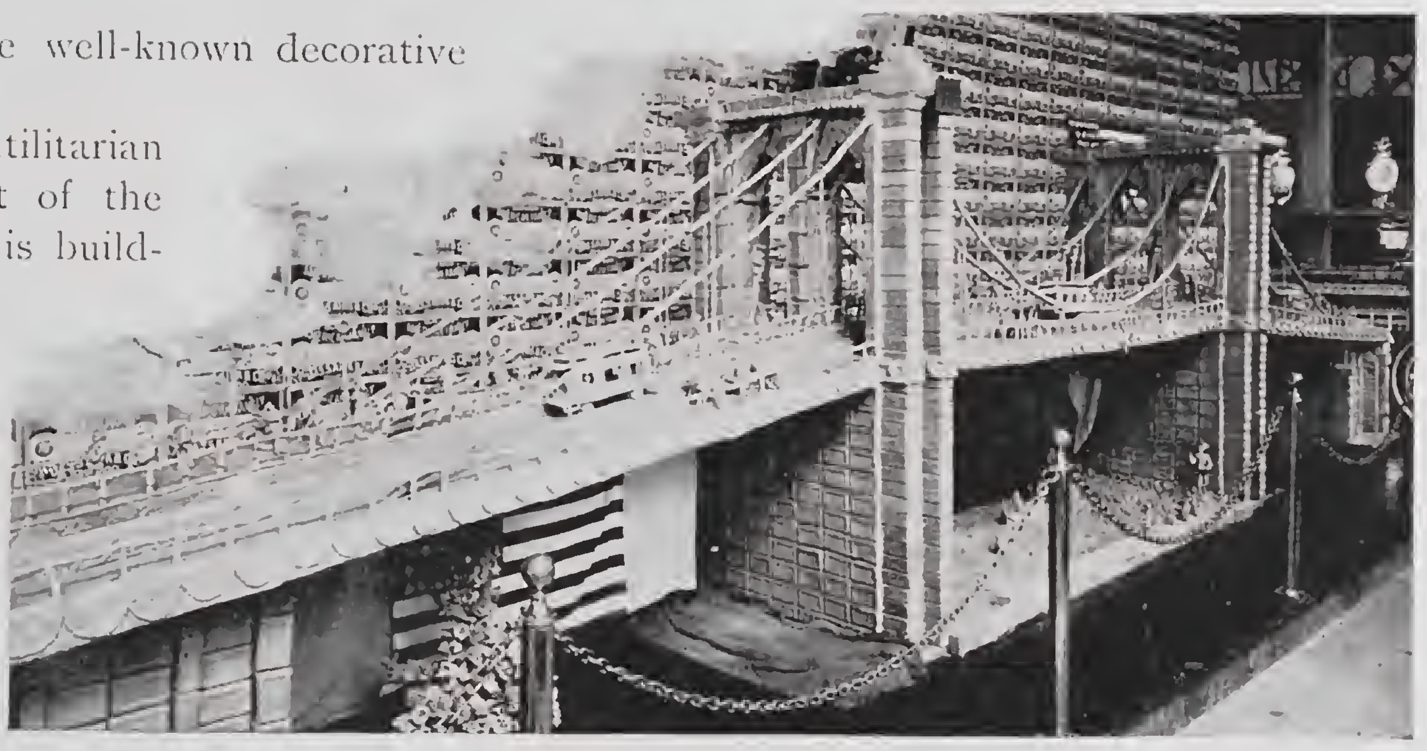
Another attractive pavilion is that of five prominent members of the National Wall Paper company, containing such perfect imitations of laces and silks, tilings, antique metal work, medallions, and reproductions of statuary, that it would seem as though the paper manufacturer herein had seemingly usurped a portion of the domain of art. The pavilion itself, which is of the renaissance order, is a rich combination of lincrusta walton, ivory, and gold. Through a

VASELINE EXHIBIT

SOLUBLE TABLETS

central court, the visitor enters the chambers opening from it, one of them decorated in the empire style in papers, machine and hand made, and with silk hangings, which harmonize best with their effect. In another room is an exhibit of satin-surfaced pressed papers, elaborate in Italian and French designs, with leather wall papers, embracing lacquered metal, ivory and canvas-faced metalized hangings; hand-printed chintz damask and tapestry papers, and a complete collection of lincrusta walton. In a third are broad friezes ornamented with wisteria vines, lilacs, and wild roses, the woodwork being finished in ivory and gold. Here and in adjacent booths are also specimens of pressed and leather papers, with some beautiful specimens of wall papers, especially in satin damasks. Among the notable illustrations of block printing is an allegorical design, specially prepared by the well-known decorative artist Walter Crane.

We will now turn to the more utilitarian department toward the south and east of the Manufactures hall, where he who is building a house will find the best and most modern apparatus for flushing, plumbing, and other sanitary purposes. Here also are appliances for securing an even temperature, for perfect ventilation, and for avoiding danger from sewer gas. Flushing is accomplished in a score of different methods. Of kitchen and bath-room fittings there are tubs and sinks of soapstone, porcelain, and tin, and in parlor and other furniture there are many beautiful specimens of enamelled wares.



BROOKLYN BRIDGE IN SOAPS

CHEMICALS

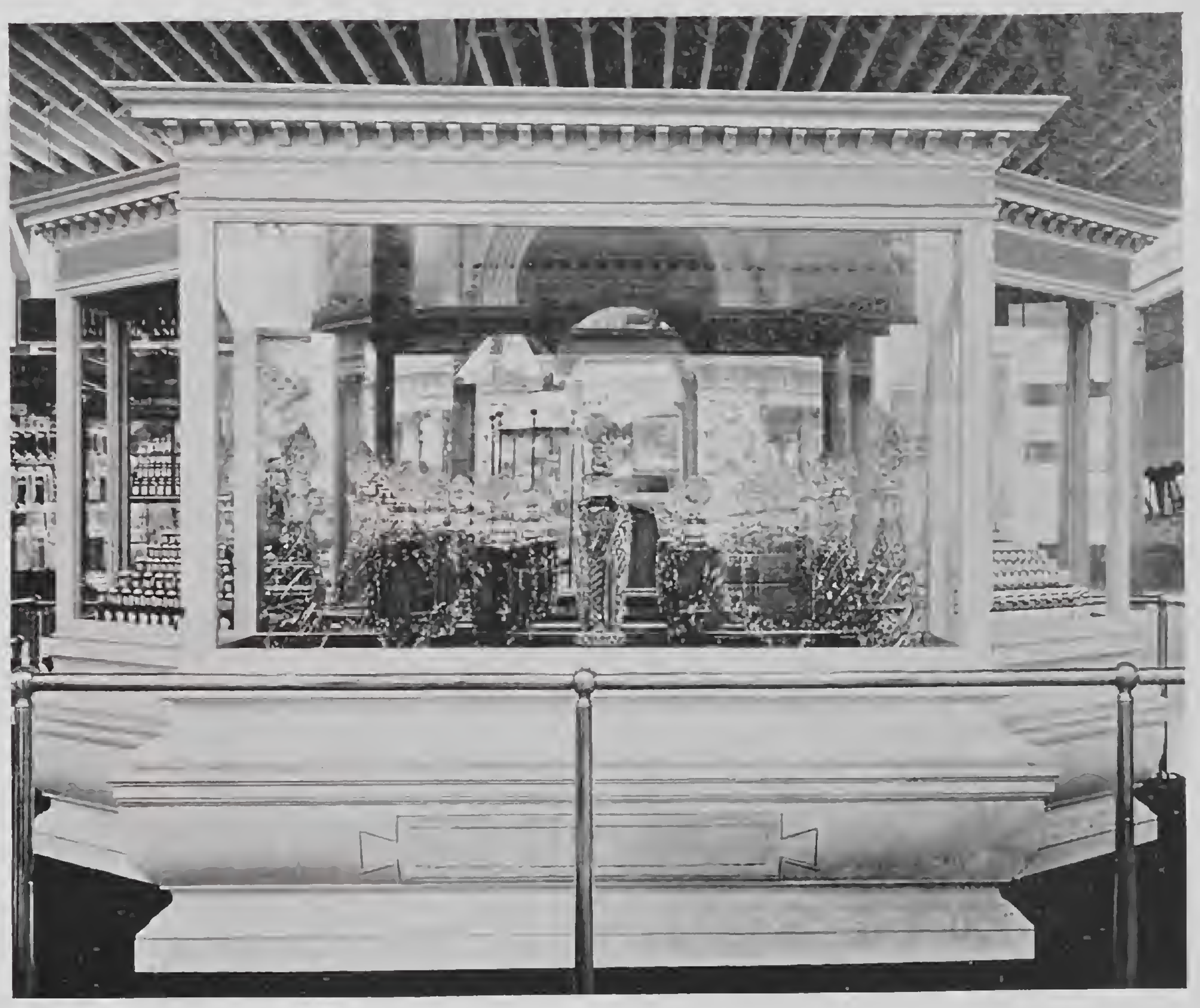
The large space devoted to stoves, furnaces, ranges, steam, and other heating appliances indicates the magnitude of these classes of manufactures. Here also are shown the various stoves and ranges which burn gas and petroleum, as well as gas logs, the last coming largely into use. The Michigan Stove company has in the shape of a pavilion a mammoth stove, forming one of the most unique exhibitions on the floor. In contrast to this, and as an historic curiosity, is a little square stove, loaned from a private Chicago collection and said to have been used in 1693 at the first convent established in Quebec. A Milwaukee company has a sample of the first Stewart stove, made in 1838, and almost as primitive in pattern. A Chicago firm has provided for itself headquarters of tasteful design, and near by are such old friends as the acorn and gold coin stoves, while a St Louis factory, producing the less familiar buck stoves, throws open a resting place whose invitation is difficult to resist. To the left of their pavilion is a fireplace of 1776, with ashes upon the hearth, and a swinging crane within; to the right is one of the first stoves made in 1846, and between these ancient specimens is the finished product of 1893. In the special line of radiators a Chicago company has the largest display, exhibiting over 160 styles.

CHEMICALS

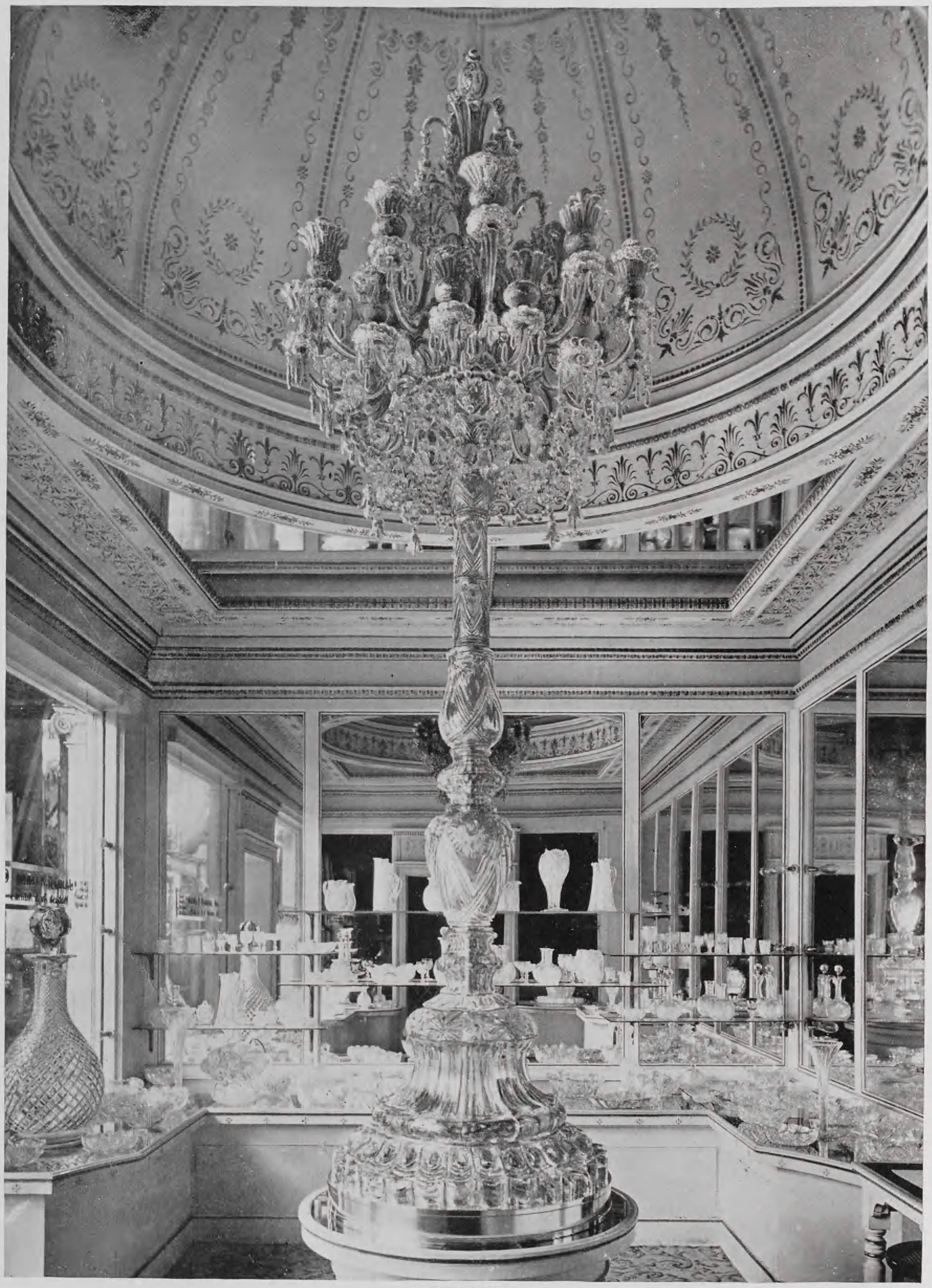
SPECIMENS OF CROWN MILANO WARE

Adjoining this display of stoves and furnaces, hot-air and steam apparatus, and everything else suggestive of heat, are those which apply to ice and the preservative qualities of cold. Here every appliance is at hand, from the plain ice box to the complicated refrigerator with half a dozen walls. Miniature specimens, pretty enough for a piece of household furniture, stand side by side with mammoth structures for the preservation of meat and beer. Muskegon is the headquarters of the establishment which produces the Alaska brand, and a striking exhibit it makes under its refrigerator pavilion. Elsewhere it is plainly demonstrated that Michigan, Wisconsin, Minnesota, and Illinois have taken the lead in this line of exhibits.

To describe the exhibits of vaults, safes, hardware, edge tools, and cutlery, would be to write a bulky catalogue of familiar articles, in the manufacture of which, however, there are almost daily improvements. The Oliver Ames and other companies have displays in their special lines which are interesting to the casual observer no less than to the farming community. Manufacturers and dealers in mechanics' tools, in screws, shears, knives, hammers, and razors may here observe how necessary it is for them to concentrate their energies within sharply defined limits. In cutlery a razor company, of Worcester, Massachusetts, fills a large case with superior specimens of its goods, arranged round a mammoth wheel formed of razors. There are specimens of check and spring locks which will close a door without slamming; there are appliances for locking a window, whether open or closed, and in the line of general hardware there are exhibits without number.


PERFUMERY

Among the cases and pavilions filled with small firearms of American make, the Remington booth presents an imposing aspect, its elaborate central display flanked with stacks



AMERICAN CUT GLASS

GLASS AND SILVER WARE PAVILION

BRONZES

of rifles. Opposite is the exhibit of Smith and Wesson, their cases containing nearly 200 beautifully finished revolvers representing the various styles manufactured. In one of these cases all the weapons have pearl handles, some of them being artistically engraved and inlaid with gold. The exhibit also includes specimens of the firm's regular output, with a practical illustration of the process of manufacture in parts, and the various tests to which they are submitted. The various styles of revolvers are fashioned into the design of a wheel, above which are two finely constructed rifles, and the different portions of the mechanisms are worked into the border of the figure. There are also men in attendance whose duty it is to demonstrate the superiority of the Winchester and Spencer repeating arms.

Beyond this section and in the extreme northeastern corner of the building, are the wire goods, ranging from a strand as fine as silk to massive bridge ropes and submarine cables. The exhibit of a Trenton company is on an imposing scale, illustrating connection with such undertakings as the construction of bridges, cable railways, and various submarine lines. A specimen of the street cable used in New York, one and a half inches in diameter, is wound on a frame, and there are four sections of the wires used in the Brooklyn bridge. Coils of submarine cables, and all apparatus pertaining to such systems as are mentioned above, form a foreground to a painting of the New York and Brooklyn bridge, whose builder lost his life in its construction. Upon a stand in front of the bridge is the model of a ship with tackle of wire.

Opposite this exhibit is a lofty tower of Columbian aspect, surmounted by an eagle, its base formed of coils of cable wire, above which is an octagonal glass case with iron, steel, and copper wire of all kinds, and the concave roof supported by metal pillars. This tower calls attention to the exhibit of telegraph, telephone, and cable wires, wires for baling hay, for binding books, and for clothes lines, wire fencing, watch, clock, eye glass, and furniture springs, brush and umbrella wire, and wire of iron, copper, and steel, flat, square, and round. The various stages of manufacture are also illustrated, from the crude metal to the finished article. In the line of wire matting, another company has a large exhibit of figures and a neat illustration, claiming that it is putting a broad band

LAMPS

GLASS AND SILVER

ROOKWOOD POTTERY

of its wire goods around the globe. Wire screens for doors and windows are the specialty of a Maine firm, while a Massachusetts company presents in the walls of its pavilion a new description of wire cloth, which appears better fitted for an artists studio than for common use. It is made of fine steel wire, and covered with a chemically prepared solution, varying in thickness from one-sixteenth to one-eighth of an inch. For this fabric it is claimed that it may be as easily stitched as canvas, that it withstands a temperature of 230° before igniting, that it is frost and rain proof, resists a pressure of 100 pounds to the square inch without fracture, and being a non-conductor, renders a building warmer in winter and cooler in summer. It is certainly a beautiful fabric in appearance, as rich and delicate as the finest stained glass.

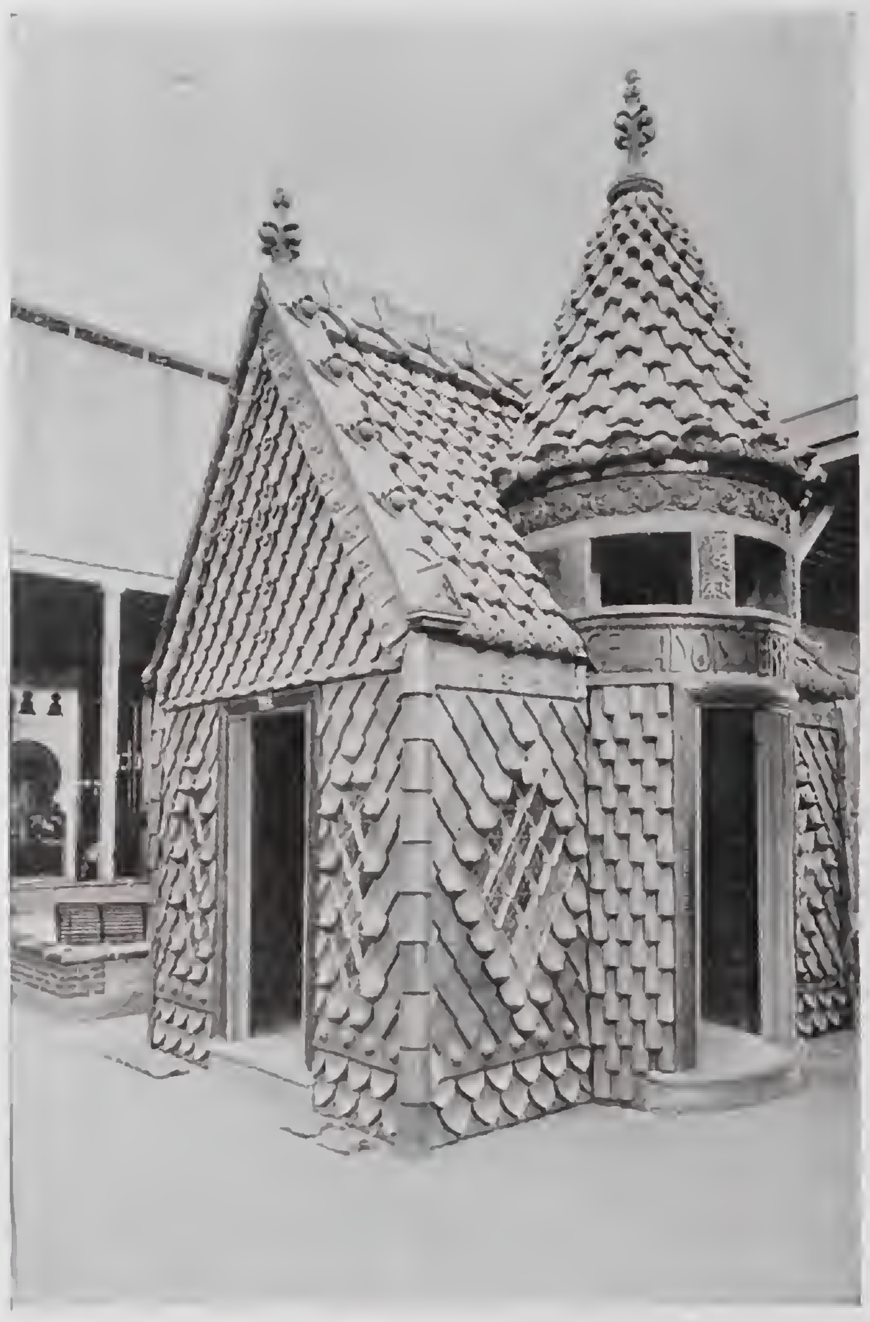
One of the oldest manufacturers of wire goods in America shows samples of what is claimed to be the first wire netting made in the United States by power machinery, and exposed for more than twenty-five years in the open air; also woven fencing used nearly as long, and about 100 descriptions of their wire cloth, branded as gold, silver, brass, copper, galvanized, and pearl. In the dome of the Horticultural building is a wire summer house from the same hands, ornamental fences, gates, flower stands, and chairs, while at the terminal railroad station are about three miles of its woven fencing inclosing and dividing the railroad platforms. There has been used by the Exposition, under the glass roofs of various buildings, a large quantity of wire netting to prevent glass from falling which might accidentally become dislodged.

Westward from the wire display toward Columbia avenue is a section devoted to exhibits of scales, weights, and measures; also a collection of water meters, near which is a rustic pavilion of petrified wood from Arizona. Within are sections of the trees, cut through in all directions so as to furnish slabs for tables, parlor ornaments, and cabinet specimens. Situated in Apache county, Arizona, and known as Chalcedony park, there are large deposits of petrified tree sections, interblended with agate, jasper, jade calcite, and amethyst. They are usually found projecting from volcanic ash and lava, which is covered with sandstone to the depth of from twenty to thirty feet, and lie exposed in gulches and basins where water has worn away the sandstone. Petrification possibly resulted from the trees being submerged by hot geysers bearing silicon in solution. While the quantity of material found is great, the sound sections are limited, and as the substance is only three degrees softer than a diamond, making costly machinery necessary to cut and polish it, the wood is rare and expensive.

Chemicals, perfumery and toilet articles are grouped in the vicinity, the soap dealers having an elaborate display. A much advertised article monopolizes considerable space with a picture of the boat named after it which crossed from New York to the Azores in the summer of 1892, with the boat itself fourteen feet long, and two feet depth of hold. A Chicago firm has an imitation in soap of Brooklyn bridge, some thirty feet long and weighing 1,500 pounds, with vehicles and pedestrians crossing in long procession, and beneath a vessel plowing the waters of East river.

LOUIS XV CLOCK

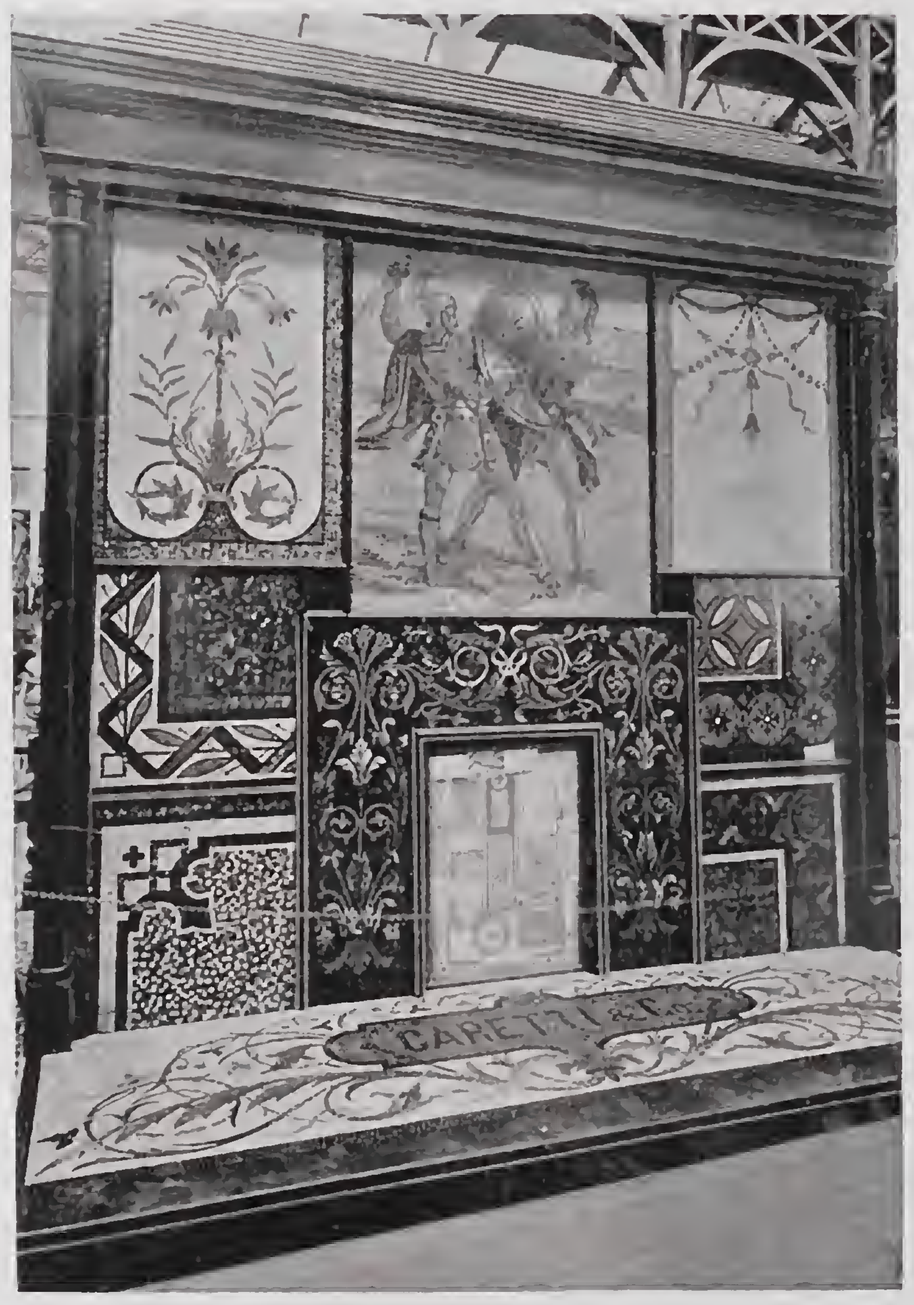
POTTERY



TERRA COTTA

SAILOR

Crossing Columbia avenue we enter the section of glass and glassware, ceramics and mosaics, a somewhat meagre exhibit, considering the importance of these industries. Pittsburgh manufacturers of pressed and blown ware make one of the largest displays, not only of white glassware but of mirrors. In cut glass, manufacturers of New York and Ohio illustrate in artistic fashion the beauty of the finer grades, when tastefully arranged. In the space allotted to the United States Potters' association is, with one exception, a complete exposition of the ceramic industries of the country, including both the manufacture and the decoration of wares, that exception being the Rookwood pottery, of Cincinnati, which has a place in the jewelry section. The enclosing walls and columns are made of fire clay, the former being of a warm yellow and brown, and the latter of a malachite green. The potter's wheel, the fiery dragon, flaming torches and other symbolic decorations constitute appropriate settings for the vases, tilings, and pieces of ornamental faïence which have given to this pottery more than a national reputation. The clays used at these works are from neighboring deposits in the Ohio Valley, and in the collective exhibits made by the association this locality furnishes many of the most beautiful articles. Establishments from New England, New Jersey, New York, Maryland, Illinois, Pennsylvania, Virginia, Colorado, and elsewhere, indicate the broad membership of the association. Among other costly and beautiful specimens may be mentioned the Lord Calvert vase, Louis XIV clock cases, Pompadour dinner sets, Pompeiian vases, pieces of majolica ware, toilet sets and jardiniéres of Italian, Egyptian, Grecian, Japanese, and Persian designs. In one corner of this section are all the substances used in the manufacture of the several wares, including blocks of fire and ball clay, washed kaolin, fine silica, ground feldspar in bottles, squares of fired clay and feldspar, feldspar in the rough, and all other crude and partially prepared materials.



MOSAIC WORK

GUNNER

A Philadelphia firm claims to possess the art of restoring and redecorating anything in the line of china, bisque, glassware, and statuary, and in support of its assertion has photographs of various mutilated wares, and beside them the articles restored to their pristine form. Near by are tasteful displays of mosaics, colored tilings, terra cotta vases and architectural pieces, the structural design erected by several hydraulic brick companies, and the heroic figures cast by the American Bronze company. Such well known bronze statues as that of Lincoln, the state soldiers and sailors monument at Indianapolis, and the Columbus statue on the Lake front at Chicago, were cast by

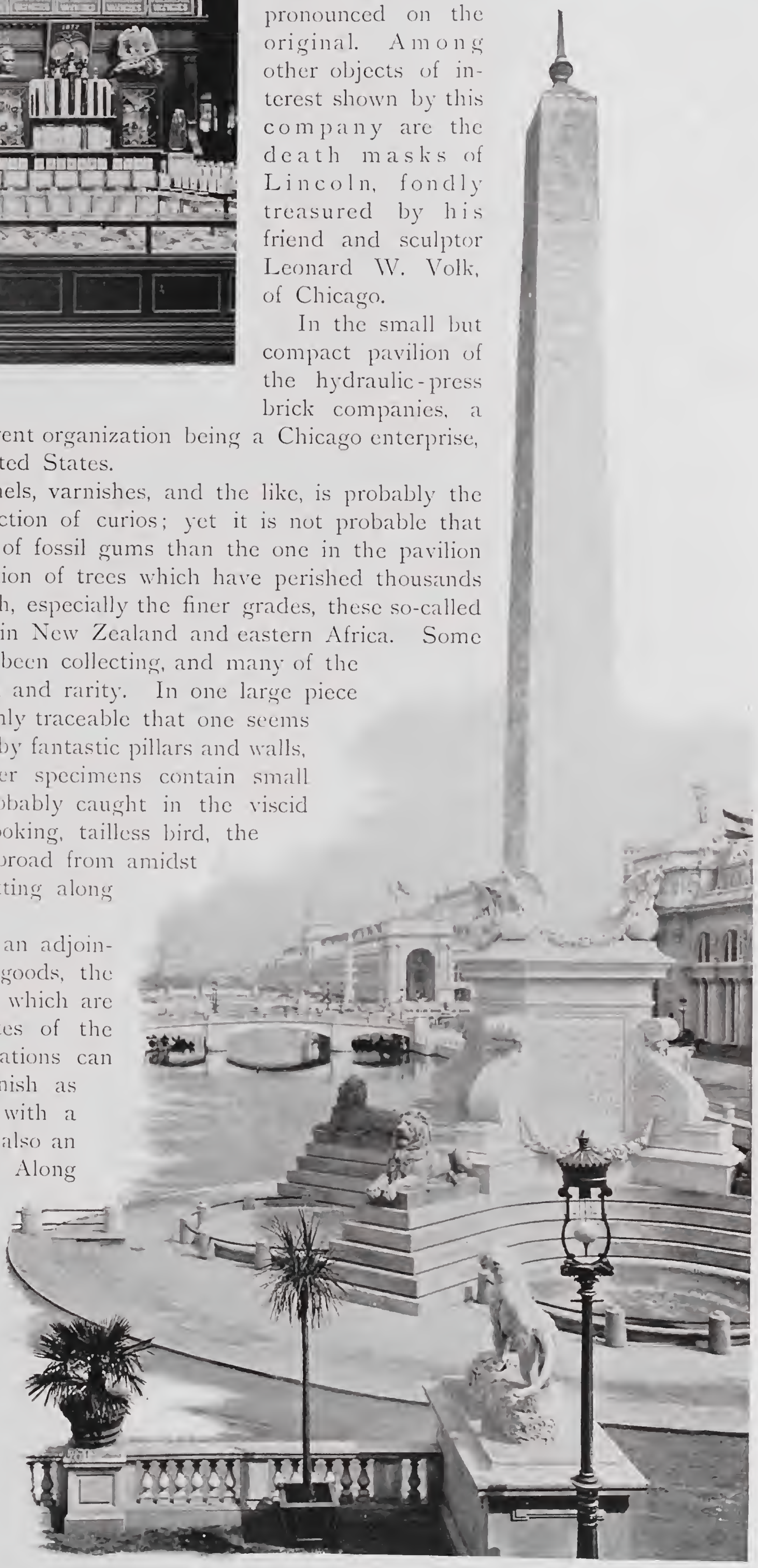
VARNISHES

this company, as also was the silver figure of justice for the state of Montana. A facsimile of the Chicago statue by Howard Kretschmar stands at this point, where many stop to judge for themselves as to the justness of the criticism pronounced on the original. Among other objects of interest shown by this company are the death masks of Lincoln, fondly treasured by his friend and sculptor Leonard W. Volk, of Chicago.

In the small but compact pavilion of the hydraulic-press brick companies, a dozen manufacturers are represented, the parent organization being a Chicago enterprise, with numerous branches throughout the United States.

In the midst of paints, gildings, enamels, varnishes, and the like, is probably the last place where one would look for a collection of curios; yet it is not probable that anywhere can be found a better assortment of fossil gums than the one in the pavilion of a Chicago varnish company. The exudation of trees which have perished thousands of years ago is the basis of nearly all varnish, especially the finer grades, these so-called fossil gums being dug from the earth mainly in New Zealand and eastern Africa. Some twenty-five years this museum of copal has been collecting, and many of the specimens are valuable for their size, beauty, and rarity. In one large piece especially, the interior construction is so plainly traceable that one seems to be gazing into an amber cave, supported by fantastic pillars and walls, and disappearing far in the distance. Other specimens contain small globules of water, or preserved insects probably caught in the viscid substance ages ago. There is also an odd-looking, tailless bird, the kiwi, mounted on a pedestal, and looking abroad from amidst the masses of copal, as though he were flitting along his native shores in New Zealand.

Varnishes and paints are displayed in an adjoining pavilion. To show the purity of their goods, the manufacturers have a series of slabs upon which are painted in colors the seals of several states of the republic. The most delicate tints or decorations can be distinguished through the coats of varnish as clearly as though the surface were covered with a film of the finest glass. A Detroit firm has also an excellent exhibit in this line of manufactures. Along the front of their pavilion is arranged a museum of copals and other gums from Zanzibar, New Zealand, and Batavia, in the natural state, and ground or bleached. Two curious carvings represent the tattooed features of Maoris, fashioned in copal by a Maori artist. At one side of the entrance is a tower, whose base is formed of gums, as taken from the earth, and its superstructure of the finished products of the factory. There are also various designs in cherry, birch, ash, mahogany, maple, butternut, and walnut, treated with the hard oil finish of which the company makes a specialty.



COURT OF THE OBELISK

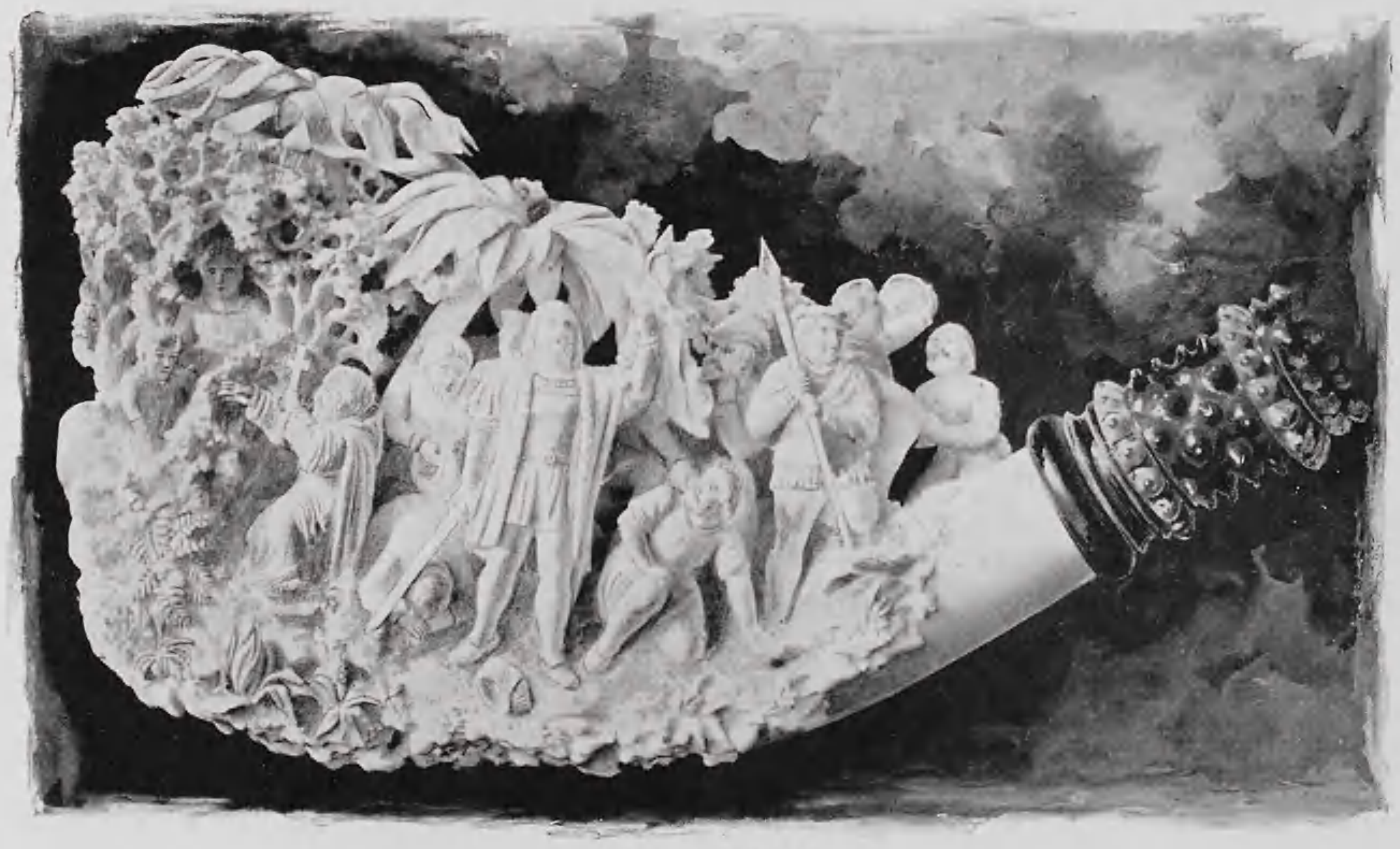
SMOKER'S ARTICLES

FURS

It is impossible here to enumerate the countless varieties displayed even by leading houses in this class of manufactures. They include all the grades ranging from heavy paints and varnishes for structural decoration to paints so delicate that they may be laid upon plush without destroying the nap, or on silk and satin without detracting from their lustre.

Adjacent to this section is the display of American furs, whose site will not be readily mistaken, for here among polar and black bears, among crouching panthers and leopards, richly robed female figures pose as dummies within the pavilions, or in the flesh move with admiring gaze from one exhibit to another.

A Chicago firm presents among other articles a robe made of 62,000 pieces of golden otter and seal skin, which represents the labor of one man and three girls for an entire year. It is valued at $5,000. The dummies in this pavilion are clad in the furs of the beaver, fox, ermine, sable, mink, otter, and seal, one of the mink cloaks being priced at $2,500, and one of seal and otter at $2,000. Other firms have adopted the museum method of display, but in minor degree as compared with a New York collection. From the roof of a San Francisco pavilion, for instance, is suspended a canoe in which sits the figure of an Indian seal-catcher, with a polar bear on either side, and a grizzly bear beneath. In a New York pavilion a polar bear carries the flag and holds the post of honor, with a leopard and other animals grouped around him. By an Albany firm a special exhibit is made of the process of dressing and dyeing seal skins, with the several stages practically illustrated, from the rough and salted skin to the finished article.



THE COLUMBUS PIPE

The northwest corner of the Manufactures building is largely devoted to exhibits of an architectural character, including granite shafts, monuments, globes, staircases, massive iron gates and fences, and soda water fountains, some of which form structures of themselves. The most massive exhibits are by Massachusetts

SCULPTURED SERPENT IN GRANITE BLOCK

FOOD EXHIBIT

and Vermont companies. An elaborate iron gateway forms the background to the display of ornamental metal work made by a Chicago firm, and at its foot is a richly wrought metallic fireplace of metal, decorated with figures in imitation of ancient hammered work.

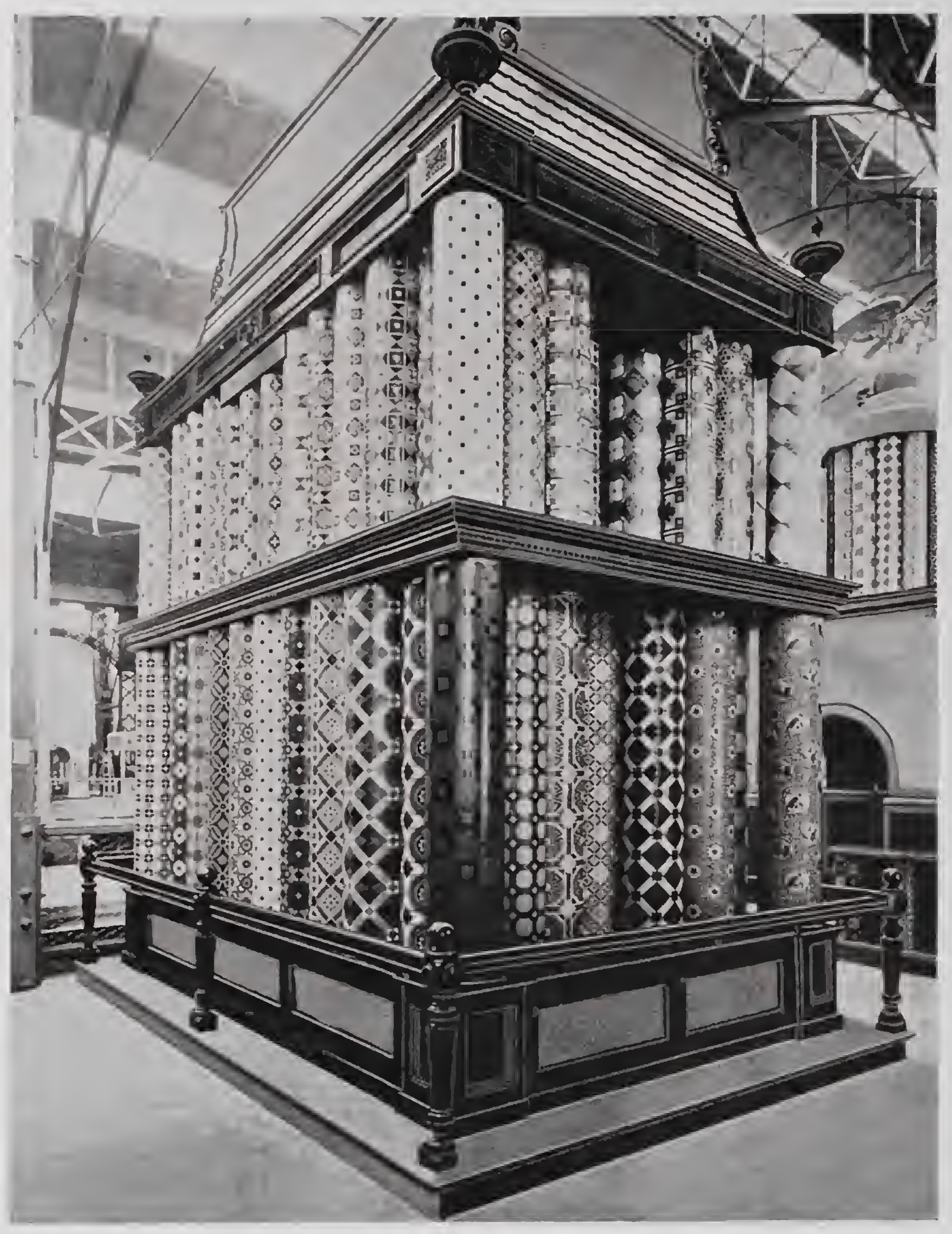
A consolidation was affected of all the firms by which were operated for many years the numerous stone quarries in the neighborhood of a little Vermont town. At Millstone hill alone more than seventy acres of granite have been uncovered, the quarrying of which gives employment to a thousand men. One of its quarries, eight acres in extent, is said to be the largest in the world from which is extracted granite suitable for monuments, the blocks being transported by rail, and taken in hand by 1500 masons, with the aid of lathes, column cutters, and polishing machines. If all the Vermont plants engaged in the finishing of this material were combined on a single site, they would occupy a space nearly twice as large as the entire area of the Manufactures building.

Before taking leave of these groups, mention may be made of several exhibits of passing interest. A Chicago company, for instance, has fashioned its painted pails and other hollow ware in the form of a huge American flag, the rows of plain white and red forming the stripes, while the stars and their field are represented by a mass of blue pails on which constellations are depicted. Behind this are shown various kinds of shoes for four-footed animals, and every variety of nail required to fasten them. Notable among these latter exhibits is one of an expert as to the best methods of shoeing horses, illustrating the advancement of the craft during the past half century, and showing the evil effects upon the hoof and leg of shoes improperly made or nailed. Another company shows different nails from those, little larger than a pin, used for the favorites of the turf, to the great, spike-like nail required to fasten the shoes of the draught horse. For this purpose Swedish iron has been found, by repeated experiment, to be superior to other kinds, on account of its ductility and fineness of texture.

TYPEWRITERS

RUBBER EXHIBIT

In order to complete our survey of the manufactures of the United States, we must ascend to the northeastern galleries, where is a miscellaneous array of exhibits, including such articles as typewriters, letter files, oil cloths, carpets, and upholstered goods; sewing machines and dress cutting apparatus, clothing, laces, trimmings, embroideries, and artificial



OIL CLOTH

flowers; hair goods and accessories of the toilet; articles of rubber, gutta percha and celluloid; and toys and fancy articles, the latter including toilet cases and novelties made from aluminum, white metal, and brass. Here also the manufacturers of stained glass make an excellent exhibit, though represented almost entirely by Chicago houses, the backgrounds of their pavilions containing some fine effects, suggestive of rich cathedral windows.

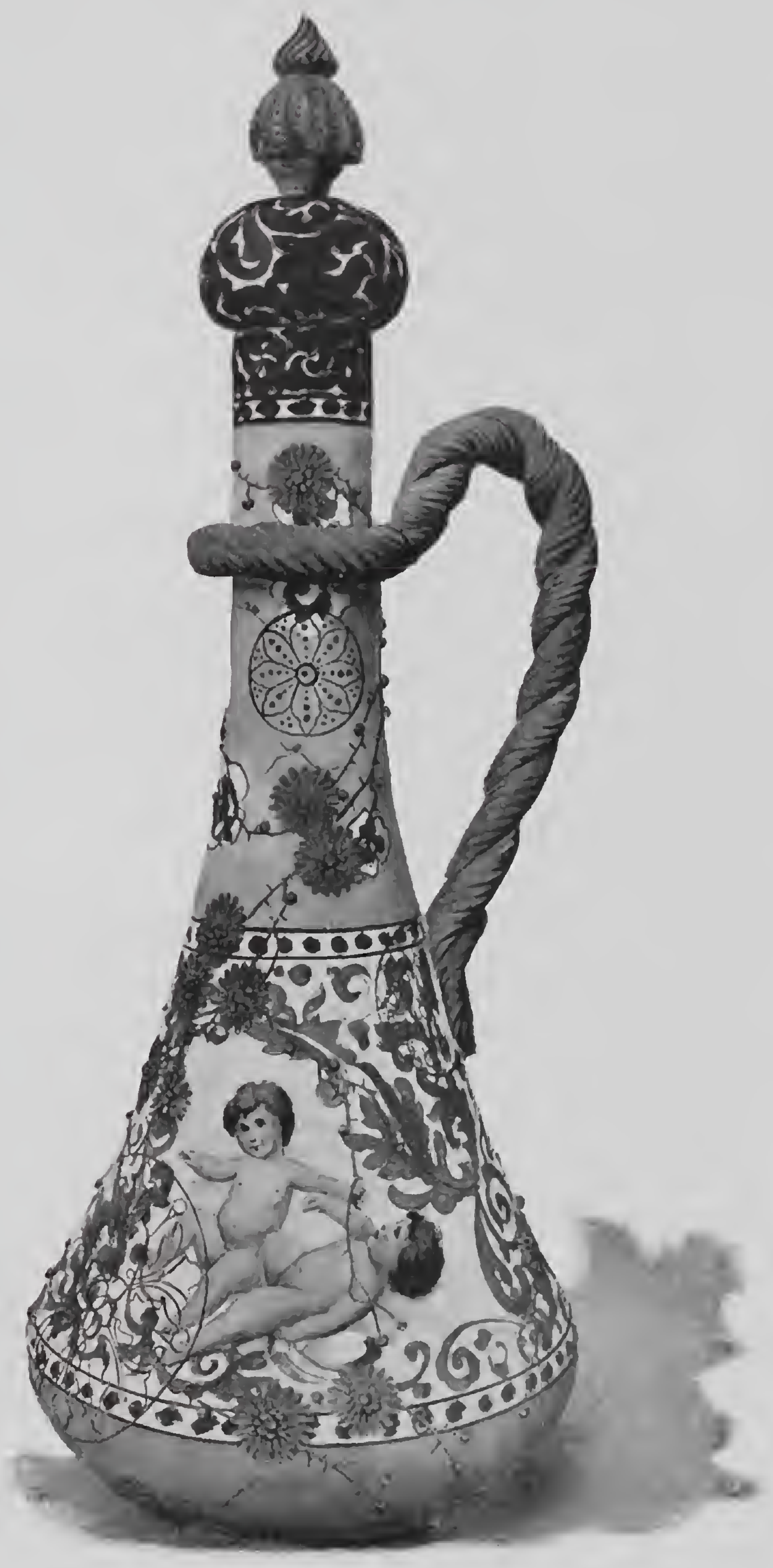
A choice display is that of the sewing machine companies, the pavilion of one of them resembling rather a marble palace than a structure devoted to business enterprise. On either side of the passage way is a large and richly furnished chamber, one for the various grades of machines, and the other for illustrating the many kinds of work which these machines will accomplish by an expert operator. A broad stairway leads to the floor above, where are several apartments decorated with their choicest needle work, the walls adorned with tapestries and silk embroideries, some in frames and others hanging from the frieze. On one side of the reception hall is the dining room, upon the table of which is a massive silver service, its pieces resting on samples of linen work. Of a chamber on the opposite side, the decorations are of a more delicate character; but perhaps the most interesting feature in the collection is that it represents only two years of organized and well directed labor aided by labor saving machinery, while in the Manufactures hall are single specimens of hand-made goods on which have been expended months and years of toil.

Of type-writers, stationery, and miscellaneous articles, from ideal fountain pens to ideal corsets and gloves, the display is infinite, and by no means unattractive. In the pagoda of a Cincinnati company is an elaborate collection of playing cards. A Boston firm has a pyramid of ice and roller skates; a Philadelphia firm, a globe and pillars of curled hair, dyed in the brightest of hues; and a New York insurance company represents in a gilded pyramid and globe the amount of its assets in gold. All these and countless other exhibits are contained in the northeastern galleries.

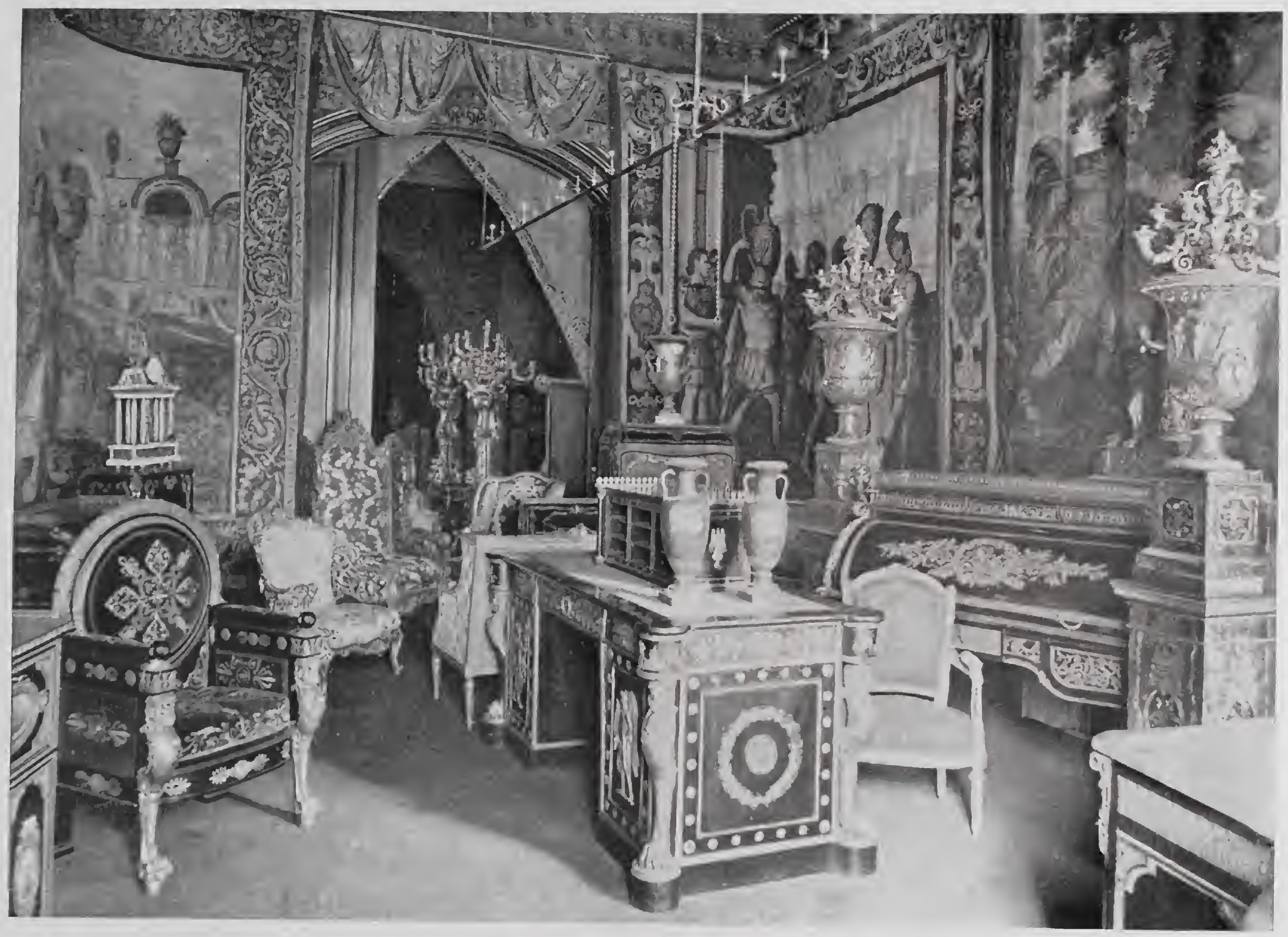
In this connection may be mentioned the exhibit of the Illinois Iron and Bolt company, consisting of copying presses and stands, the former inlaid with pearl, and of most finished workmanship.

Elsewhere on the gallery floor are exhibits of curtain fixtures, oil cloths, antique furniture, ceramics and needle work, representing the conveniences and luxuries of life in such attractive form that it is difficult to draw a dividing line between them. They form together an elaborate display and cannot here be described in detail. A Newark company has constructed its entire pavilion from the different grades of spring shade rollers which it manufactures at its several works. Philadelphia firms reveal the artistic possibilities of oil cloths and linoleums, and prove that the Quaker city has a claim to recognition as one of the leading centres in this department. In this group are also included mineral fabrics of wire, glass, and asbestos.

Toward the southern end of the gallery is the pavilion of a New York firm, of somewhat remarkable appearance, but so constructed as to be in harmony with its contents. On either side of the main entrance are



CROWN MILANO WARE



COLLECTION OF ARTISTIC FURNITURE

worm-eaten panels, taken from the choir stalls of Italian churches, nearly three centuries old, and at the further end is a clock of massive proportions with choice specimens of English wood-carving, once the property of the earl of Pembroke. The exterior of the pavilion is in keeping with the special lines which it exhibits, including antique furniture and Gobelin tapestries, with a chamber furnished in rich but simple style, and with a varied assortment of cabinets, desks, candelabra, harpsichords, and tapestries. Among them is a gilded and decorated harpsichord of Louis XV pattern; an antique cabinet of the same period, an empire desk with side candelabra, and other curiosities, some of them rare specimens of carving, gilding, and inlaying. Of the fabrics, the rarest is the Diana tapestry, woven in Brussels at the workshop of Antoine Goubels, from a design by Du Breuil, and fashioned during the early portion of the seventeenth century for Cardinal Berberini.

Adjoining the manufactures exhibits in the northeastern galleries, are several sections which, though classed under liberal arts, are for the most part so distinctly commercial in character, that they may be briefly described at this point. In a division designated commerce, trade, and banking, for instance, are check punchers and money changers, methods of automatic store service, and the exhibit already noticed of the New York insurance company, while a Boston firm illustrates the modern systems of wires, cables, and pneumatic devices by which cash and packages are conveyed in large mercantile establishments. Beyond these are patent devices for sashes, blinds, doors, staircases, roofs, and street curbs, brought within the domain of liberal arts by being classified under such heads as construction of roads, constructive architecture, and plans and models of public buildings and dwelling houses. Of this nature also are the displays of manufacturing druggists and pharmacists, of medicines, mineral waters, and foods for infants and invalids.

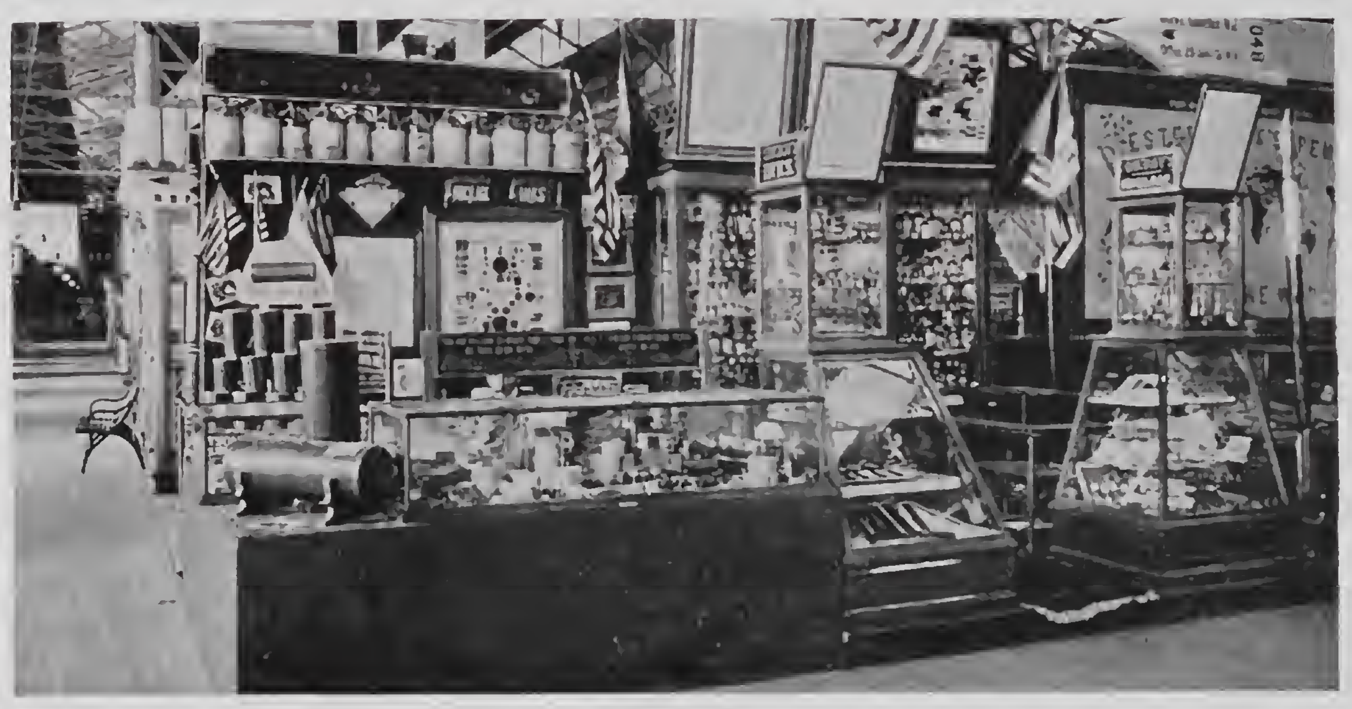
SEWING MACHINES

ELECTRO PLATING PAVILION

Among these classes are likewise the instruments of the physician, surgeon, and dentist, with trusses and artificial limbs, casts and apparatus used in the treatment of spinal difficulties, porous plasters, artificial teeth, electric dental instruments, and such as are used in the diagnosis of diseases.

Thus in as brief space as the nature of the subject will permit, I have described the condition and somewhat of the progress and development of home manufactures as represented at the Fair. In truth it is a marvellous development that has been made within little more than a hundred years, for the history of our manufactures begins with the history of the republic, and not until after the revolutionary war did they gain any permanent foothold. Material there was of excellent quality, and in boundless supply. Plains and valleys were well adapted to the raw staples needed for textile fabrics; forests were filled with valuable woods; the mountain sides with marbles, slates, and building stones; of coal and iron the supply was unlimited, and water-power was well distributed throughout the Atlantic slope. Yet, as in all new countries, progress in this direction was slow, and notwithstanding all the advantages, at the close of the eighteenth century the new republic had barely outgrown the restrictive policy of the mother country, and for many years later ranked only in the second class among manufacturing nations.

While for the first half of the present century there are no very reliable data, it is probable that in 1810 the total value of United States manufactures did not exceed $50,000,000. Thenceforth, though with some fluctuations, remarkable progress was made, especially as to cotton fabrics, to which the war of 1812 gave additional impetus, so that by 1825 New England alone had nearly 400 factories at work. For 1850, when first we have access to official sources of information, the total value of all manufactures was stated at a little over $1,000,000,000, this amount being almost doubled in 1860, and more than quadrupled in 1870. For the decade ending with 1880 the gain was in smaller proportion, with an increase of only twenty-five per cent in output and with no considerable increase in the number of establishments. Under the cumulative growth of power appliances, the volume of production has been largely augmented within recent years, and with a corresponding addition to the number of operatives. For 1892 our manufactures may be approximately stated at $7,500,000,000, giving employment directly to 3,500,000 persons, and supporting indirectly at least four times that number, or more than one-fifth of the entire population of the republic.

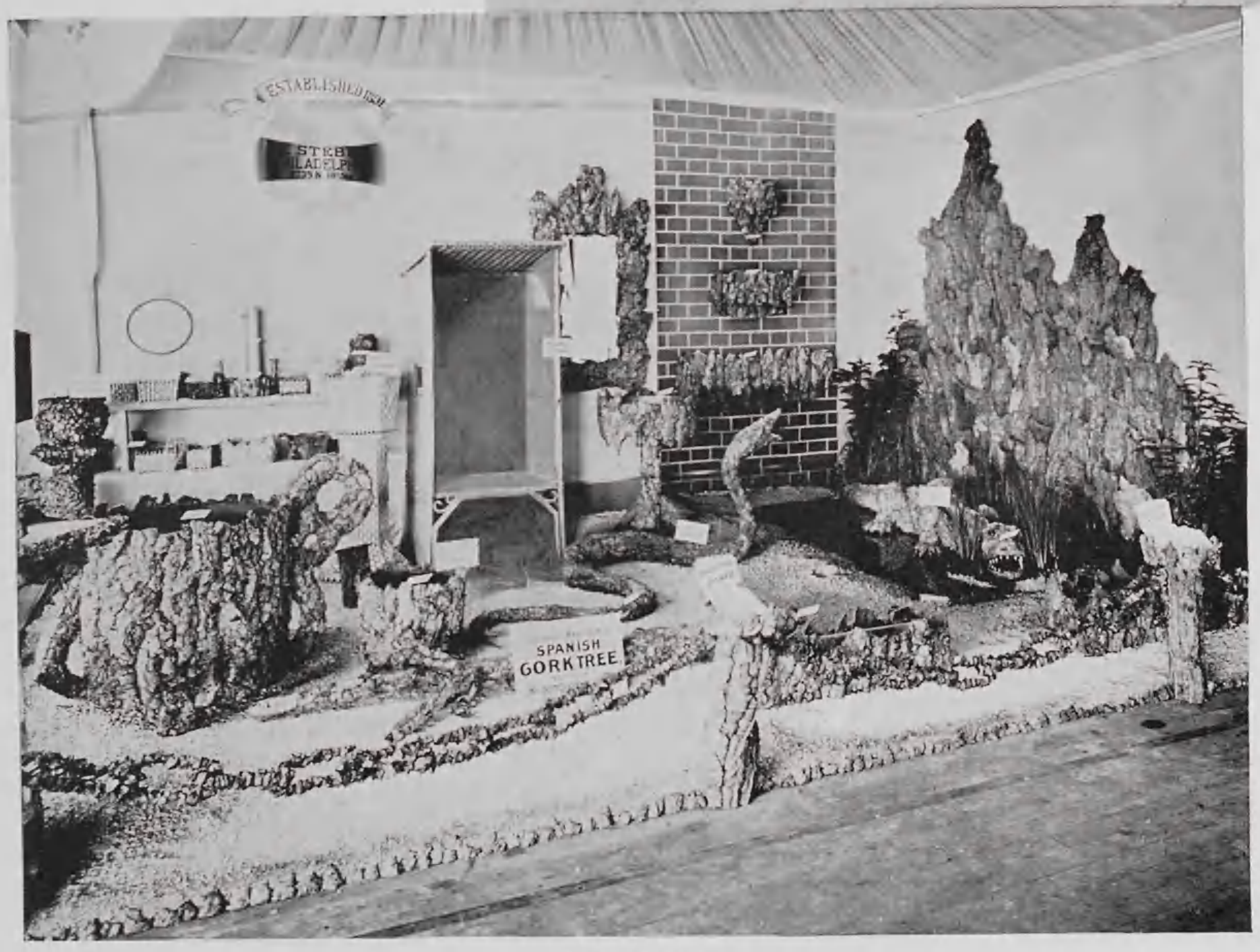


INKS AND PENS

DOOR SCREENS

To improvements in machinery and methods, more than to increase of population or legislative enactments, is due such phenomenal growth; and in this direction the republic has played well her part. Just as in England the cotton-gin and carpet-loom revolutionized those branches of handicraft, so have American inventions been adopted,

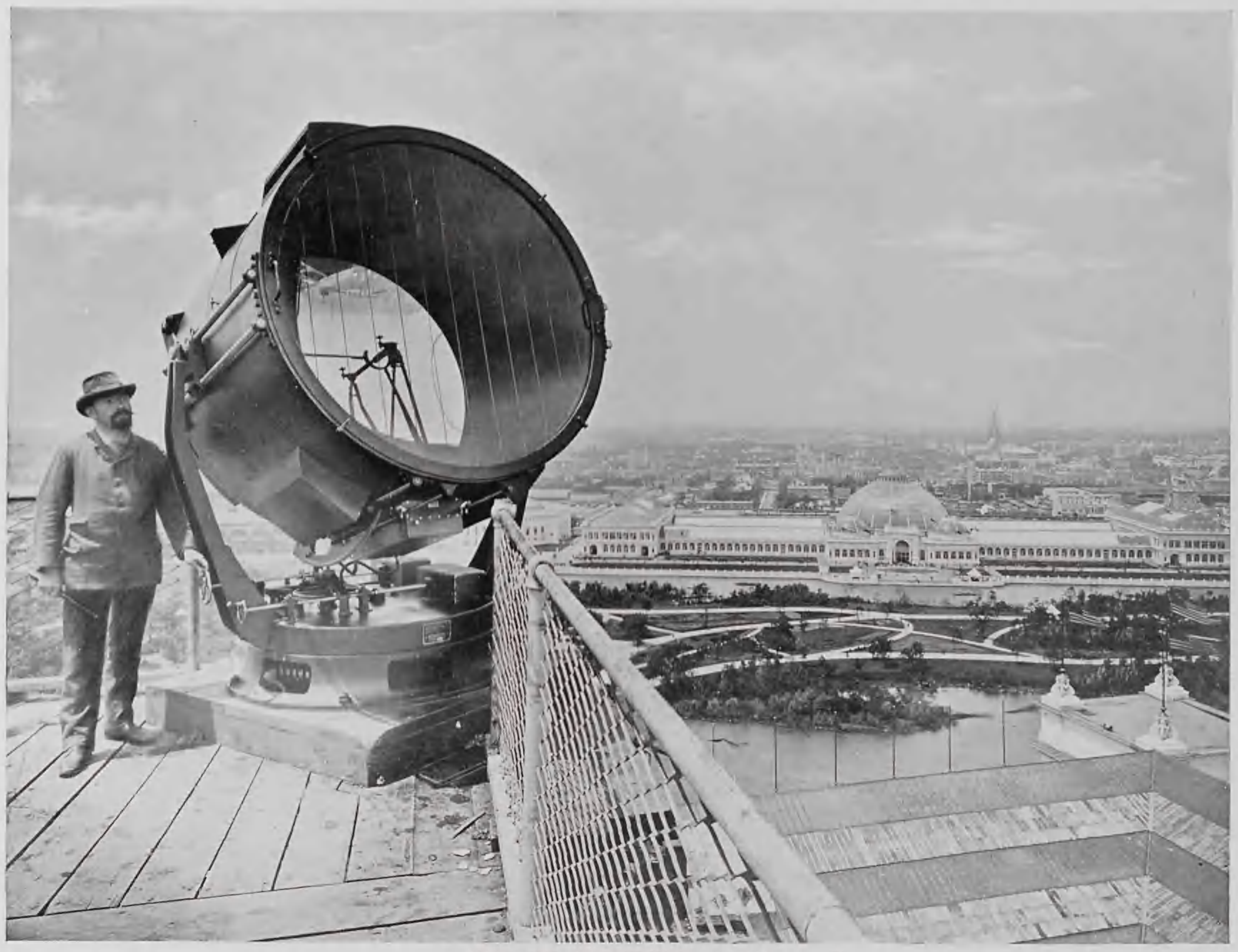
however unwillingly, by European manufacturers, especially in the use of appliances for interchangeable parts. Meantime, with our almost perfect mechanisms, we are constantly increasing the quantity and improving the quality of our products, while gaining for those products a world-wide repute. Thus it is, for instance, that with a thorough subdivision of labor, fire-arms of intricate pattern can be produced at the rate of 200 a year for each of the workmen employed. So also the prices of clocks and watches have been reduced to a small percentage of their former cost, watches made in part by machinery being manufactured at the rate of three a week, while a Swiss maker requires more than a week to fashion a single timepiece. Of certain lines of silk goods, as ribbons and handkerchiefs, we manufacture largely for export, with the aid of compound looms; and of dress goods our swift-moving looms produce nearly twice as much as those of European design. In these and countless other instances the cost of production has been largely diminished, with a steady increase in the output of plant and factory.



CORK EXHIBITS

As to the social aspect of these industries, all cause for anxiety in this direction has long since disappeared. Certain it is that in manufacturing cities, with their diversity of occupations, employment is more readily obtained than in those which depend mainly on agriculture, commerce, or mining, and that at wages from twice to four times larger than are paid in European countries. In New York alone at least $130,000,000 are distributed yearly, and in Philadelphia almost as much, among hundreds of thousands of operatives.

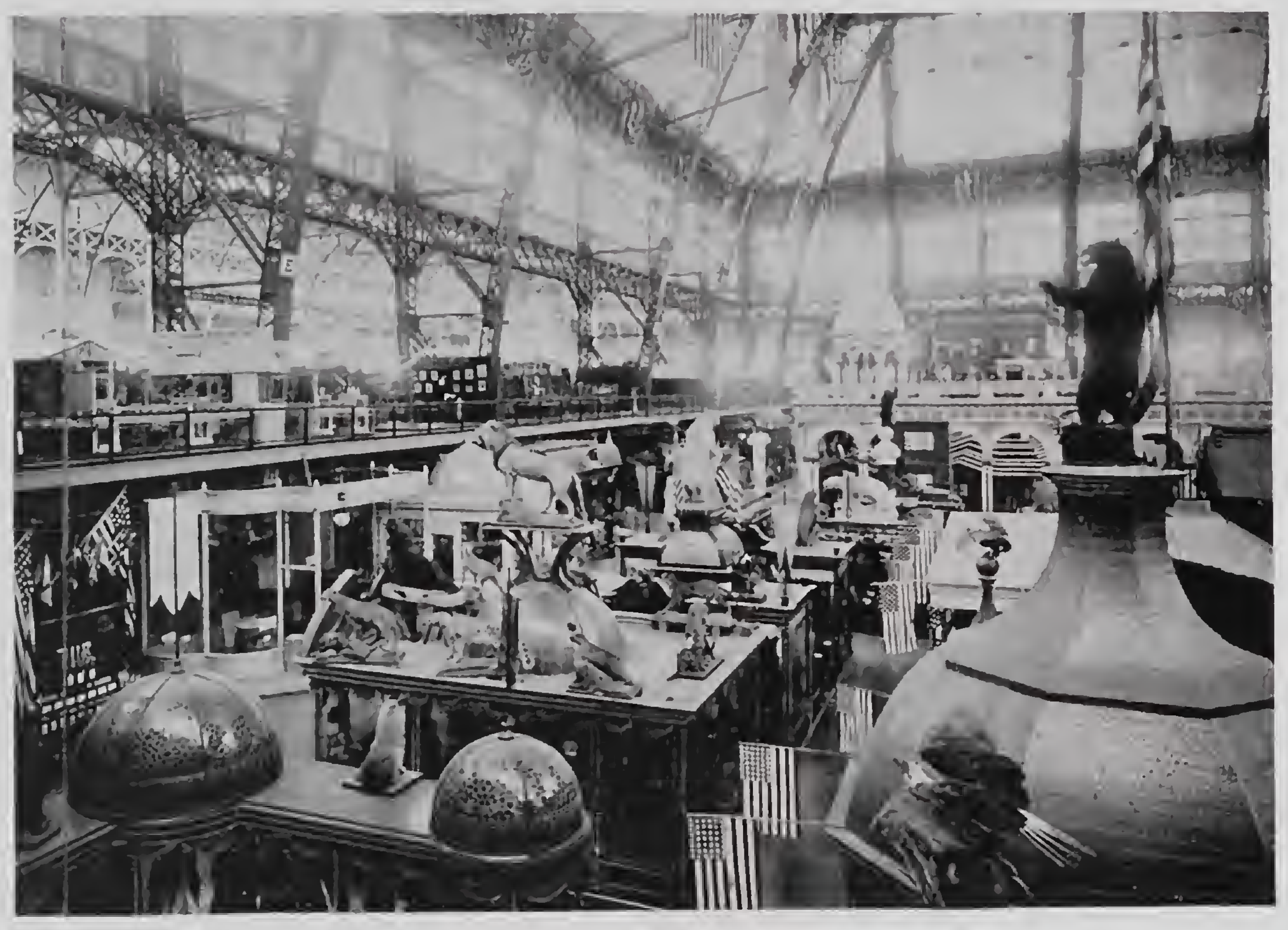
In the latter city, as in New England towns, many of the operatives own the dwellings which they occupy, two or three members of a family often engaging in separate branches of labor, and earning more than sufficient for its support. Nowhere is there such poverty, and nowhere, except perhaps in New York, such overcrowding as in London, Paris, and other European centres. In a community whose mainstay is its factories and workshops, more money falls into the hands of the people, and is by them invested or distributed among the channels of trade than in a purely commercial city with ten times its volume of business. Thus the profits accruing from the industries of the community are largely retained within the community itself, and represented in permanent improvements or other substantial forms of realized wealth. No nation, it has been often remarked, ever became really great without manufactures. Assuredly we shall not ourselves be found wanting as a nation in that element of greatness, for with less than a three-fold gain in population, our manufactures have increased from seven to eight fold within forty years, and with improved methods and machinery constantly adding to their volume, who shall forecast the story which another two-score of years will tell?



SEARCH LIGHT ON MANUFACTURES BUILDING

World's Fair Miscellany.—In dealing with the varied and conflicting interests represented in the Exposition, it was almost inevitable that the management should become involved in entanglements. No point at issue created more complications with foreign commissioners than their right to sell duplicates of their exhibits, and no incident threatened more serious consequences than the forcible invasion of the Russian section of the Manufactures building by custom house officers, in civilian garb, and the seizure of one of its exhibits, together with its custodian, on the charge that goods were being sold in bond. The Russian commissioners, protesting angrily against this summary method of dealing with the matter, covered up their exhibits and threatened to withdraw entirely from the Exposition unless a satisfactory apology was forthcoming. Thereupon Director-general Davis, though the offending parties were the government and not the Fair officials, admitted the discourtesy, and the head of the customs service at Jackson park ordered his men in future to refrain from examining the goods of foreign commissioners, except in their presence. Thus the disaffection ended, though for a time threatening to spread to the officials of other foreign countries. This was not the first incident of the kind; for a few weeks before, a commissioner from Paraguay had suffered arrest at the hands of a Columbian guard. Finally the director-general issued a manifesto, doubtless preventing more serious consequences, forbidding the arrest or interference with foreign commissioners.

In justice to government and Fair officials, it should be stated that many foreign countries sent to the Exposition large quantities of goods which were entered as exhibits but were intended for sale. Thus, for a time, was avoided the payment of customs duties; but several complications arose from the attempt to dispose of such merchandise, for under regulations prescribed by the secretary of the treasury, this could only be done by having the goods cancelled as exhibits, transferred to the government warehouse on the grounds, and there appraised and the duty paid. Duplicates of samples could thus be placed in bond, sold at any time, and delivered at the close of the Fair. During the month of May the only exhibit in the Russian section of the Manufactures building was a placard with the following inscription. "Russian exhibit delayed by the ice in the Baltic sea." So also was deferred the installation of the Norwegian and Danish collections; but Russia was particularly unfortunate in this regard. By January, 1893, her pavilion had been completed in St. Petersburg and accepted by the government, after which it was taken to pieces, and with most of the exhibits and some twenty Russian carpenters placed on board three steamers bound for the United States. For an entire month they were frozen in near Labava, amid the ice of the Baltic sea, and two of them seriously injured. It was not until the last of March that they reached Copenhagen, and not until May that the carpenters, afterward largely re-inforced, began work to erect their pavilion. Then, attired in red blouses, black vests, leather belts, heavy brogans, and caps with patent leather visors, they set to work with a will, though supplied only with what seemed the most old-fashioned of implements, the saws, for example, being kept taut by twisting a hempen rope between crude wooden frames. Nevertheless the pavilion rose apace, and was dedicated on the 29th of May, the coronation day of the tsar, though not formally opened until some three weeks later.



GENERAL VIEW FROM GALLERY

Austria's exhibit was the first to be completely installed in the Manufactures building, and was thrown open to the public on the 3d of May.

The royal porcelain factory of Copenhagen, whose exhibits are mentioned in the text, was founded in 1779 by Christian VII, and until 1867 was managed in the king's name. During this period splendid sets of porcelain were fashioned at its kilns, of which the palaces of Copenhagen, especially Rosenberg castle, contain some valuable samples.

In the British section are some interesting specimens of knit goods made by hand, among them hosiery such as is worn by the Scottish clans. Near by are woolen shawls made in Shetland, one of them a two-ply fabric and a remarkable piece of workmanship.

In connection with the exhibit of Jamaica, the most important of the British possessions in the West Indies, it may be stated that this island has about 3,000,000 acres of land available for cultivation. Of this area nearly two-thirds are in the possession of individuals or trusts. No less than 660,000 persons, most of whom would, in other countries and under other circumstances be included in the laboring classes, own the small tracts which supply them with the means of a livelihood. The main reasons for this condition of affairs are the facilities for acquiring land, cheapness of living, and low rate of wages, with attendant scarcity of labor. Jamaica's pretensions as a health resort are here represented, for it is claimed that the island is well adapted to the cure of bronchitis, catarrh, consumption, Bright's disease, rheumatism, dyspepsia, and nervous prostration.

Several of the higher class of Chinese merchants are represented at Manufactures hall, among them Chun Quan Kee, a wealthy and travelled Chinaman, who makes the largest exhibit of merchandise and whose headquarters are in Canton.

Although Corea presents the smallest exhibit of any foreign nation, there are few which attract more attention. It is the only one ever prepared by that country for such purposes, and the importance which the so-called hermit kingdom attached to it appears from the fact that she appointed as her royal commissioner an official whose rank corresponds with that of an assistant secretary of state.

Probably no exhibit in all the Exposition was installed at such expense of money, time, and labor as the great gun which stands in the Krupp building. The massive hoisting apparatus whereby it was lifted from the steamer which carried it to Baltimore was specially manufactured for the purpose in the Krupp works at Essen. The car which brought it to Chicago was composed of two iron trucks, weighing 64,000 pounds, under each of which were sixteen wheels. As the journey was made westward toward the Fair, the bridges and culverts over which the train was to pass were carefully inspected, and in some cases strengthened, for the gross weight of car and gun was 225 tons. Along the line of route, and at Jackson park, crowds were gathered to witness the progress of the monster piece of ordnance, which finally reached its destination a fortnight before the formal opening of the Exposition. In the structure of walrus hide which California exhibits in the Shoe and Leather building, as mentioned in the text, no piece is less than two inches thick. It is said that two years and a half were required for the tanning process, which was conducted at a San Francisco establishment, the walrus from which the hides were taken being killed in the Arctic ocean, in July, 1888.

PERFUMES

CHAPTER THE NINTH

FOREIGN MANUFACTURES

FROM the manufactures of the United States let us turn to those of foreign lands, represented at the Columbian Exposition in larger volume and variety, of richer material and of more finished workmanship than at any of our great world's fairs. Among all the foreign participants the largest amount of space was allotted to Great Britain and her dependencies, 500,000 square feet in all, of which the mother country appropriated more than three-fifths, leaving but 184,000 for what Sir Charles Dilke has termed the Greater Britain of her colonies. Considering that some of these colonies voted individually almost as much money as England herself, this allotment appears somewhat out of proportion, and especially in the hall of Manufactures, where to Great Britain is assigned 100,000 square feet, apart from gallery room, and to all British colonies only 35,000. It is also worthy of note that Britain has no central pavilion, like those of France and Germany, in which to mass the best of her exhibits, though occupying one of the choicest sites in the gift of the director-general.

The front of the British
avenue is largely occupied
by porcelains and chinaware,
ing of ceramics and mosaics.
display is inferior to that
nations, as to the French
man in elaboration of design,
able exhibit, one far superior
the British isles. While the
the London Exhibition of
may be termed a renaissance
facturers have devoted them-
the quality of their wares
new designs or methods of
is noticed the influence of
borrowed from the French,
duct of Sèvres and Dresden;

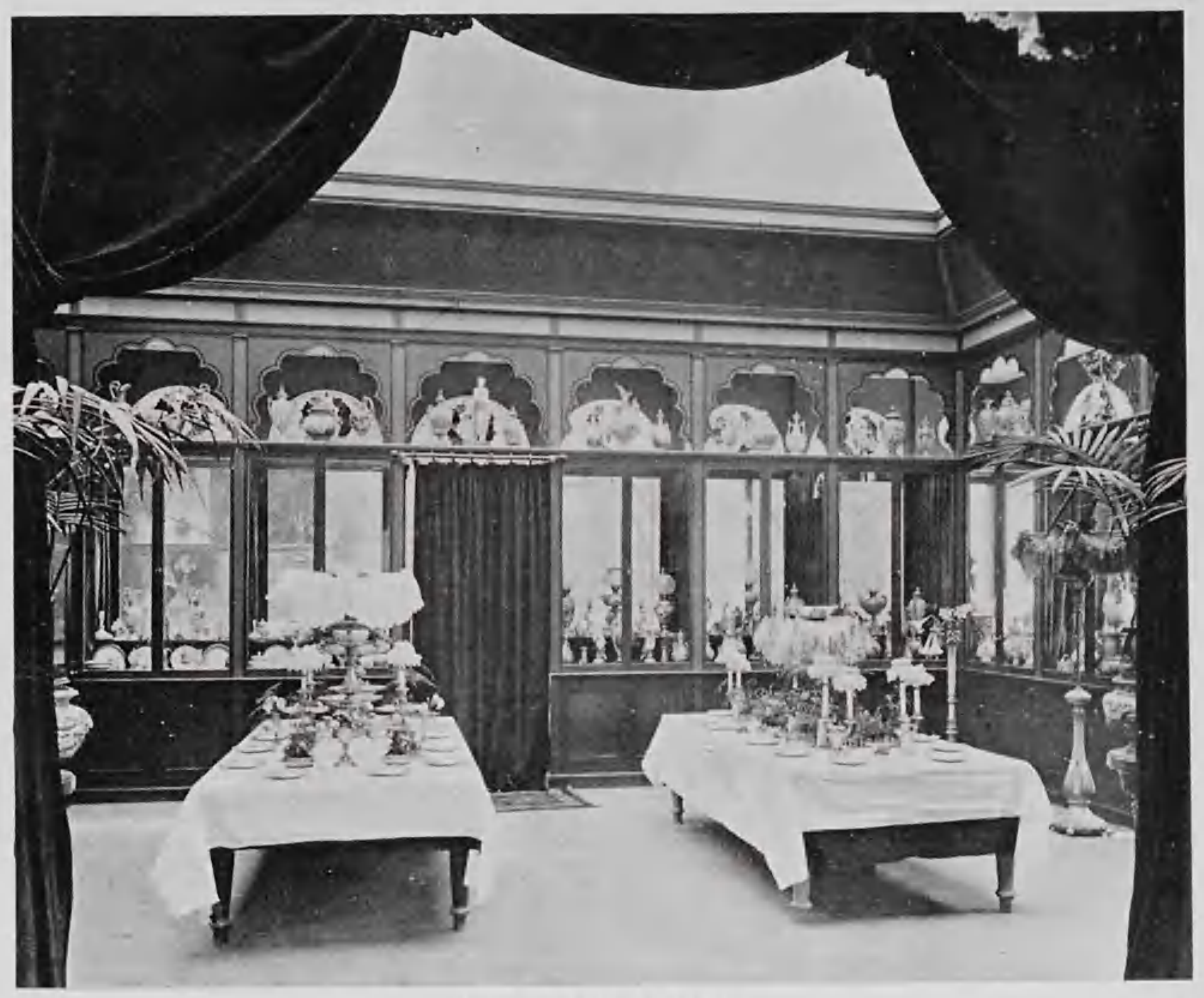
DOULTON POTTERY

section, facing on Columbia
by pottery, and especially
all grouped under the head-
If in certain respects the
of some other European
in delicacy and to the Ger-
it is nevertheless a credit-
to any before collected in
years that have elapsed since
1851 have witnessed what
in ceramic art, of late manu-
selves rather to improving
than to the production of
manipulative treatment. Still
Japanese art, with motifs
and from the choicer pro-
but in the specimens pre-

SHAKESPERIAN CASKET

PORCELAIN

ROYAL WORCESTER PAVILION



ROYAL WORCESTER WARE

sented at the Fair we have no mere striving after effect; rather a chaste and subdued embellishment, with variety of detail and excellent workmanship.

SPECIMENS OF GERMAN PORCELAIN

A prominent place in the British section is given to the exhibits of Doulton and company of Lambeth and Burslem, contained in a double pavilion connected by a dome-covered hall, with decorated panels displaying ceramic processes from the digging of clay to the ornamentation of a vase. Among them is a ewer, six feet high, of slender proportions and novel design, probably the largest ever fashioned of stoneware. On another more than four feet high are groups around its widest part representing epochs and incidents of English history, beginning with the Druids offering human sacrifices in the dark and ending with the reign of Queen Victoria. Around the neck are single figures of English kings and queens, from Caractacus to George I. On a ware vase are depicted scenes from rustic and animal life, and on other pieces are paintings of birds, scroll work and models in bas-relief. On one of the Faïence vases are depicted some of the heroines of antiquity, as Dido, Cleopatra, Medea, Ariadne, and Lucretia. On a pair of vases more than five feet high are portrayed the legends of Perseus and Andromeda and Theseus, and Ariadne, the daughter of Minos, as she gazes seaward from the shore of Naxos, "watching, weary, and forsaken," calling to mind one of the most descriptive lines of Ovid:

> Reddabant nomen concava saxa tuum.

On a tall, slender ewer are figures typical of art and music, with heads symbolical of epic and lyric poetry. Chief among the exhibits from the Burslem works of this firm are the Columbus and Diana vases, the Dante and Chicago vases, with numerous articles for use and ornament. Of other of the Doulton exhibits, in the gallery of the Manufactures building; and in the grounds of the British building mention will be made elsewhere. Second to the Doulton display, and second only, is that of the Worcester Royal Porcelain company, containing a large variety of specimens, and in value varying from one to many thousands of dollars. Among them are some beautiful vases tinted in ivory and ornamented with gold filigree of cunning workmanship. In their list of specialties are porcelains in many colors and patterns, including chaste and elegant designs in encrusted gold and Pompeiian green, with figures and statuettes in stained ivory, jardinières and flower-pots, lamps and candelabra. But the most attractive feature is their dinner and banquet sets, the pieces ornamented with coral rose and gold, with lace-like edges and figures painted in delicate hues. On a so-called rustic table the centrepiece is encircled by a fence of ivory and gold, and filled in with figures suggestive of rustic life.

A specialty of the Coalport China company's exhibits is its reproduction in chalcedony of the hues of agate, as may be seen in two of its vases intended for Princess Christiana. In those of another company is a remarkable illustration of what can be accomplished in the way of decorative art on porcelain and china-ware. Among them is a Shakesperian centerpiece of more than a hundred parts, its base in Rouen green, with tints of ivory and gold, with figures emblematic of poetry, history, tragedy, and comedy, supporting a vase on which are depicted the heroines of Shakespere. By one firm is displayed a fine collection of Copeland, Minton, and Wedgwood wares, among them specimens of the pâte-sur-pâte process, of Chinese origin, and producing the effect of cameo work, the decorative scheme being applied in thin layers of liquid clay before the vase is burned. Here also is a reproduction of the jubilee vase presented to Queen Victoria in 1887. By other firms are exhibits of artistic pottery, jet goods, tiles, and mosaics.

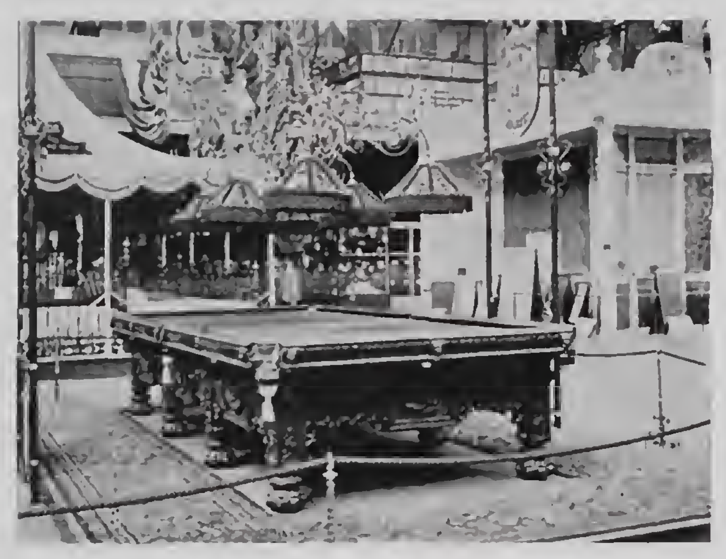
ANTIQUE IRISH BROOCH

Prominent among the exhibits of gold and silverware and jewelry are those of the Goldsmiths' and Silversmiths' company of London, in the line of gem ornaments, plate of all descriptions, cutlery, chronometers, clocks, and other articles, including some of the best and most recent specimens of English workmanship. A feature in their display is a Shakesperian casket, intended to illustrate the art of damaskening in connection with goldsmiths' work. The lid is fashioned in the form of moldings damaskened iron and gold, with figures typical of dramatic and literary art, surmounted by the crest of Shakespere. On the body of the casket, contained within moldings in gold, are enameled paintings representing some of his most famous scenes, with a medallion bust of their author, and a picture of his birthplace in gold repoussé. By Mappin brothers is also a display of silver and electro plate, and by another exhibitor one of historic articles, including old English, Scotch, and Irish silver plate. In an adjoining group are reproductions of Irish art in metal work, largely in the form of crosses, croziers, and shrines, copied from the collections of the Royal Irish Academy and Trinity College, Dublin. Of these there are duplicates in the Blarney Castle Village in Midway plaisance, each one forming a link in the history or traditions of the emerald isle. Here is a fac-simile of the bell of Saint Patrick, said to have been preserved for fourteen centuries by custodians descended from the same family. There is also the famous Tara brooch, its face inlaid with ornamental designs in many varieties, resembling those of illuminated Irish manuscripts, but so minute that only through a powerful lens is revealed their delicate tracery. This, it is related, was picked up on the sea-shore by the child of a poor Irish woman, sold for a few pence to a Drogheda watchmaker, and finally purchased by the academy for the sum of $1,000. Other historic brooches there are, one named the Daïriada, the most ancient of all the collection, and another, bearing the date of 1050, unearthed by the plough of a farm laborer. Of crosses we have the cross of Cong, made in the days of Turlough O'Conor, king of Erin, and placed in the abbey of Cong by Roderick O'Conor, the last of Ireland's monarchs.

PORCELAIN

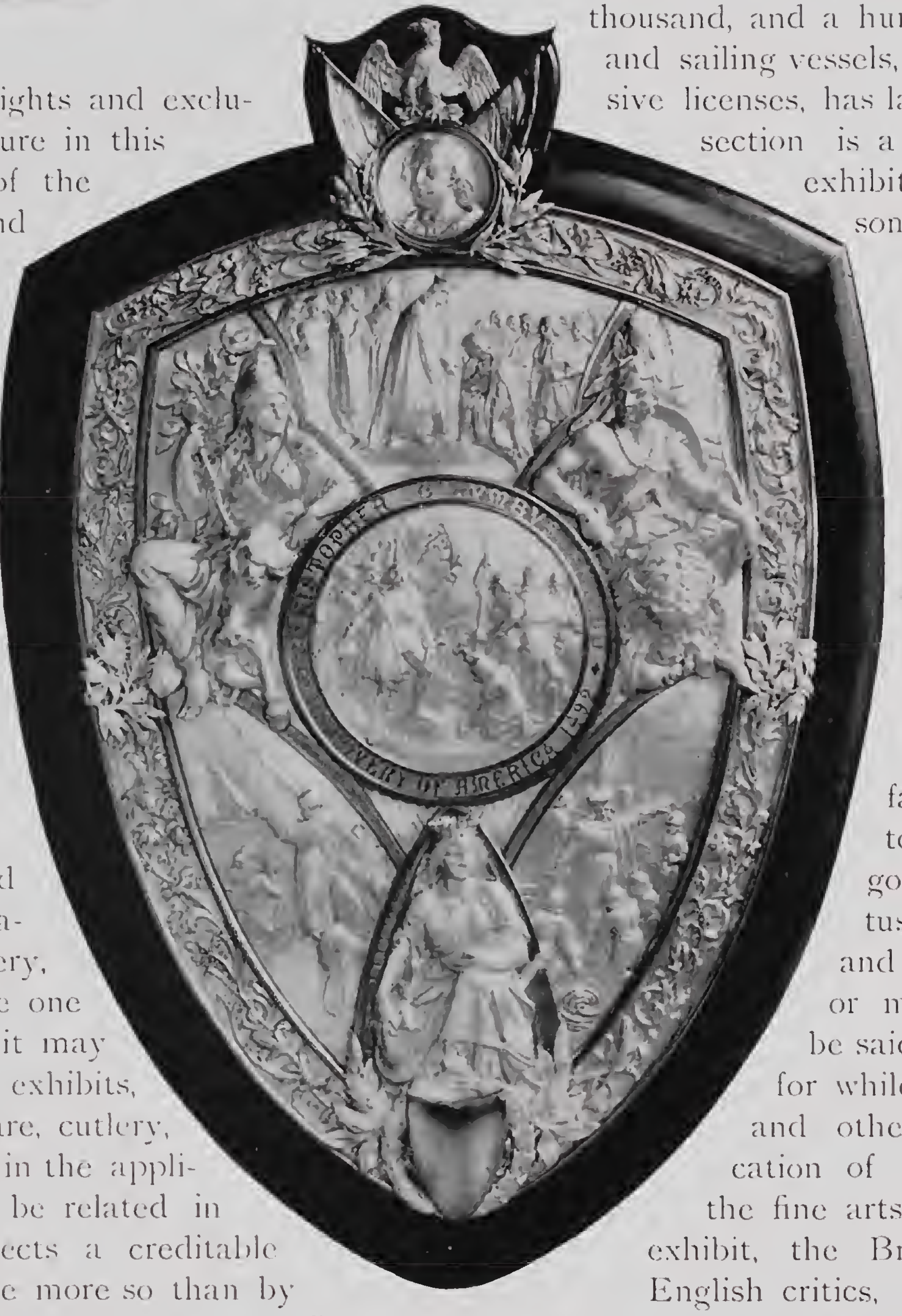
PORCELAIN

In the Furniture group, which includes upholstery and artistic decoration, the centre of interest is an exact reproduction in three-quarter scale of the banqueting hall of Hatfield house, the seat of the Marquis of Salisbury, probably the best specimen extant of the Elizabethan style of architecture. By a London exhibitor, all the oak carvings have been reproduced with remarkable fidelity of detail, portraying historic incidents long before this ancient manor became the residence of Queen Elizabeth or passed into the hands of Sir Robert Cecil. From one side of the hall, left open for the purpose, is an unobstructed view of the interior, its marble floor covered in the centre with a Persian rug, on which are plain oaken chairs and table such as the Cecils use to-day. On the further side is an old-fashioned fire-place, bearing the date of 1637, with fire-irons and dogs, or andirons, to correspond, flanked with the mailed armor which the Cecils



BILLIARD TABLE

In the group of chemical and pharmaceutical products, including druggists' supplies, there is a large number of exhibitors, prominent among them being those of the United Alkali company and of Stevenson and Howell. The former is a combination of manufacturers, organized in 1890, not as a trust but for mutual protection, first to avoid the violent fluctuations which, before that date, had been of frequent occurrence, and second, by the adoption of new or improved processes to establish a superior and more economic standard of working. The company has a paid up capital of $42,000,000, and a reserve fund of $2,500,000, owns about fifty chemical, copper, metal, and salt works, several hundred miles of railway sidings, railroad wagons by the thousand, and a hundred or more of steamers and sailing vessels, employs an army of men, and with its valuable patent rights and exclusive licenses, has largely reduced the prices of many lines of goods. A feature in this section is a model of Windsor Castle erected in the booth of one of the exhibitors, a perfect fac-simile in miniature, forty feet long and some twenty inches in height, a green baize cloth doing duty for the green sward which surrounds this ancient abode of royalty.



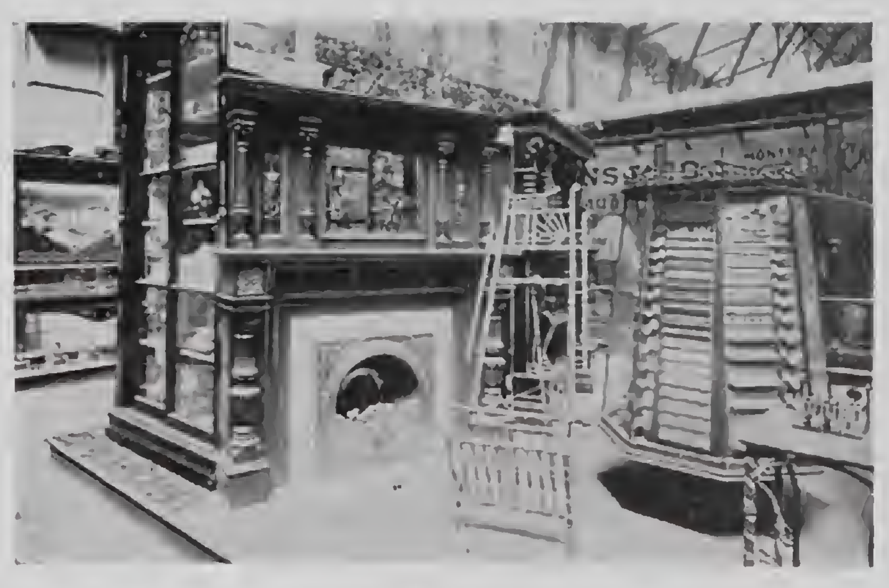
THE COLUMBUS SILVER SHIELD

Manufacturers of paints, colors, dyes, and varnishes are well represented, as also are those of type-writers, papers, blank books, and stationery. Of art metal work a single exhibit has a group of bronze replicas, including one of Robert Burns. In marble and stone work there are Keltic and other crosses, one of them a reproduction of the ancient cross of Kilkispeen, in the county of Kilkenny. Of glass and glassware there are two, and of stained glass in decoration, four exhibitors, in the line of domestic, civic, and ecclesiastic art. Of church furniture there are samples from an Exeter factory. Of hair work, coiffures, and accessories of the toilet, of travelling equipments of rubber and celluloid goods, of lighting apparatus, of heating and cooking apparatus, of vaults, safes, hardware, edged tools, and cutlery, and of materials of war and sporting implements there are one or more exhibitors in each of these groups. In conclusion it may be said of Britain's collection that it differs from all her former exhibits, for while at other expositions her display was mainly of hardware, cutlery, and other serviceable articles, its excellence now consists rather in the application of art to objects of common utility, and as will presently be related in the fine arts themselves.

Though in some respects a creditable exhibit, the British collection has been sharply criticised, and by none more so than by English critics, on the ground that it does not properly represent the manufacturing power and achievements of Great Britain. Says her commissioner, in an article recently published in the London *Engineering*, a magazine of which he is the editor: "While a handful of exhibitors will stand high in the Manufactures and Liberal Arts building, the question naturally arises, why, in this great battle-ground of commerce, England has refused to push forward any considerable force of her manufacturing army? And why is this, which will be probably the most important, as it is certainly the largest exposition the world has seen? The answer is found partly in the fact that Englishmen have not realized the vast importance which the Columbian Exposition will have on the trade of the world in the immediate future, and probably for many years yet to come, and partly because the actual facts of the case were not brought clearly enough before the possible exhibitors, who care little for official circulars, and require conviction by personal arguments, a long and tedious process. They resent the policy

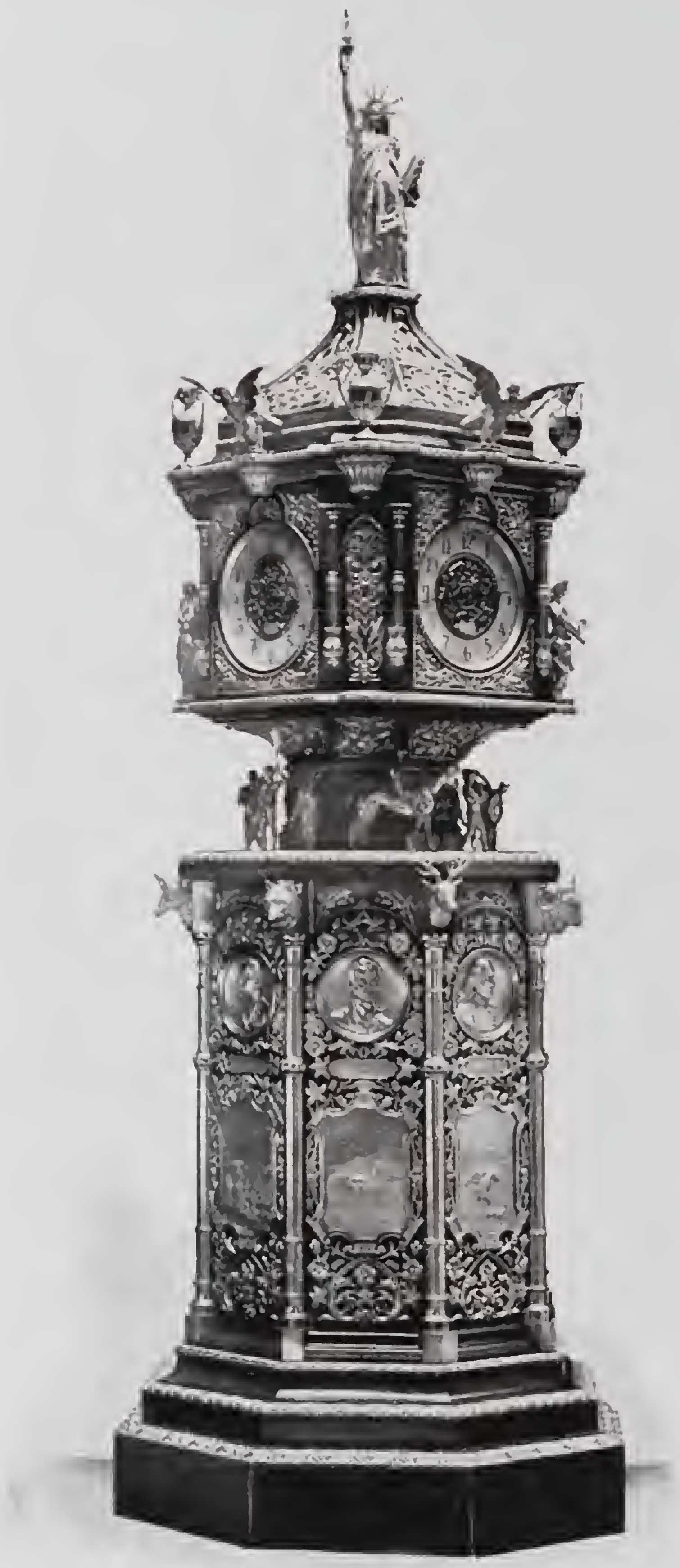
ENGLISH BILLIARD EXHIBIT

that has so largely helped to develop American industries and manufactures and to increase her wealth, ignoring the fact that in spite of tariff barriers the United States are by far our largest customers, and therefore most worthy of being studied and encouraged."



CANADIAN MANTEL

Before proceeding further with the exhibits of European nations, let us see what the dependencies of Great Britain have on display in their several sections extending to the south and westward of the British division. In the Canadian section, one of the most striking of all the exhibits is in the form of a mammoth wheel, the component parts of which are circular and hand saws. To present a detailed description of Canadian manufactures as represented at the Fair, would be to describe those of an ambitious and enterprising country, but one in which this department is subservient to her agriculture, lumber industries, and fisheries. In her 10,000 square feet of space Canada has a large variety of manufactures, but little of any one class, for here are illustrated many branches of industry. The cotton fabrics of the dominion, for instance, are almost represented by a single firm, and of other textiles the collections are insignificant, in quantity at least, as compared with those of the United States. Builders' hardware, as to their comparative importance, it may here be stated that the annual value of the agricultural exports of the dominion, is nearly $40,000,000; of lumber $24,000,000, and of the products of the sea about $10,000,000, while exports of manufactures proper are valued at less than $7,000,000, against some $42,000,000 a year of imports from Great Britain alone.



THE EXPOSITION CLOCK

Among the more interesting exhibits is a miniature representation of the industries introduced and fostered by the dominion government among the Indians of Manitoba and other provinces, through the schools established in their midst within the past few years. Side by side with printing cases, work-benches, carvings, needle-work, photographs and models of industrial schools, and specimens of drawing and penmanship, are native lodges filled with robes, net-work, woven baskets, bead-work, and illustrations of those simpler occupations of savage life from which the rising generation is departing. A large skin filled with pemican, or dried and pounded buffalo meat, is displayed as somewhat of a curiosity, by the Assiniboin Indians. Among the models is one of a native village near Bute Inlet, British Columbia, and another of the Rupert Land industrial school, the latter fashioned by an Indian boy. This school also displays a neatly printed pamphlet, the handiwork of its pupils, and from which a portion of this brief description has been derived. A few feet from the Canadian section is that of New South Wales, whose motto "Advance Australia," seems not inappropriate, when we compare her exhibits with those of other colonies. Taken at a disadvantage, when required to stand before the world as a manufacturing country, she has nevertheless a creditable display, in view of the infancy of this department of her industries. Large photographs of public buildings and scenes in and around Sydney, profusely displayed on the walls of her pavilion, suggest to the observer the important part which the metropolis plays in the material life of the colony. At one point suites of library and dining-room furniture, made of cedar, black bean, honeysuckle, and other native woods, neatly carved in designs representative of the native flora, may be instanced as superior forms of manufacture, while the furs and hides of opossums, cats, bears, goats, and

SOAP WITH WINDSOR CASTLE MODEL

kangaroos, gathered into another nook, point to a not unimportant branch of enterprise. A large stand, on which are bottles of eucalyptus oil for lubricating and, as some use it, for medicinal purposes, a pile of asphaltum blocks, a case of horse-shoes, which will compare with the best in the American section, stationery, clothing, washing machines, and other miscellaneous articles testify to the ambition of New South Wales to be classed ere long as a manufacturing country.

The exhibits of Hindostan are housed in a double pavilion, one part of which, constructed entirely of teak-wood, is a specimen of Hindoo wood carving, as developed in the lapse of centuries. Among its contents are elaborately carved tables, desks, chairs, book-cases, mantels, and all the interior furnishings and decorations made from teak, black and sandal woods, executed by native workmen. In the other chamber is an exposition of metal-work fashioned by native artisans, including vases and ornaments in brass and copper, silver and gold, with enamelled work of cunning design. In the form of a screen to this apartment is a beautiful piece of embroidery, with interwoven silk, gold, and silver wire, on which is wrought in needle-work a copy of a poem, inscribed upon the tomb of one of Agra's queens.

SECTION OF PAVILION SHOWING BERLIN ROYAL PORCELAIN

In the pavilion of Ceylon in the form of a small Cingalese temple, is a collection of articles manufactured from native cabinet woods of extreme durability. There are also specimens of woven and hammered goods, with various implements for the preparation of food. In the structure known as the Ceylon court, between the French and German government buildings, near the lake shore, is a fine reproduction of old time Cingalese architecture, of which, as also of the book in the Woman's building, where are illustrated the occupations and condition of the female population, mention will be made in other sections of this work. The Jamaica pavilion is a light and cheerful structure, filled with the natural and manufactured products of the island. Around the main entrance are views of Kingston harbor, and other scenes in this new and popular winter resort. Among the exhibits is a case filled with delicate fans, decorated with shells, ferns, and bird's wings. There are also shells carved in the form of leaves and other articles of deft workmanship, and at the foot of the case are articles manufactured at the government penitentiary, with specimens of Jamaica beans and banana flour.

In a choice collection of native woods one-half of each piece is polished, to show the beauty of its grain and its value for cabinet and ornamental purposes. One end of the pavilion is somewhat suggestive of a grocery, with small bins containing samples of starch, tapioca, vermicelli, and sugar. Jamaica coffee, berries, ginger, lemonade, pickles, and guava jelly, with salt from Turks island, within the jurisdiction of Jamaica, tend further to demonstrate the richness of this portion of the British West Indies. Specimens of old Jamaica rum are not far removed from a counter of wide-brimmed straw hats, the making of which is an important branch of industry. A neatly arranged herbarium displays the flora of the region, and a dozen large rolls of sole leather, a collection of common pottery, and a few large tortoise shells presently to be carved into articles of surpassing beauty, are suggestive of other pursuits of the native and half-breed population.

Adjacent to the British section is the French pavilion, on the opposite of Columbia avenue, a handsome and tasteful edifice, its entrance near the clock tower, and the centre of the nave in the purest of French classic style, and with façade of the French renaissance, finished in white and gold, and rich in artistic decoration. Passing under the arched ceiling and between walls with figures emblematic of science, art, literature, and philosophy, we enter a chamber where is a rich display of tapestries and porcelains, rich not in number but in quality. Among the former are masterpieces from the Gobelin national factory, established about the middle of the fifteenth century, and whose tapestries are of world-wide repute. On one of them, named La Filleulle des Fées, measuring some twenty-six by fourteen feet, and yet of most delicate tone and finished workmanship, were expended nine years of continuous work. It is valued at a million of francs. In another of almost equal dimensions, whose theme is Homer deified, four skilled workmen completed a seven years' task. There are

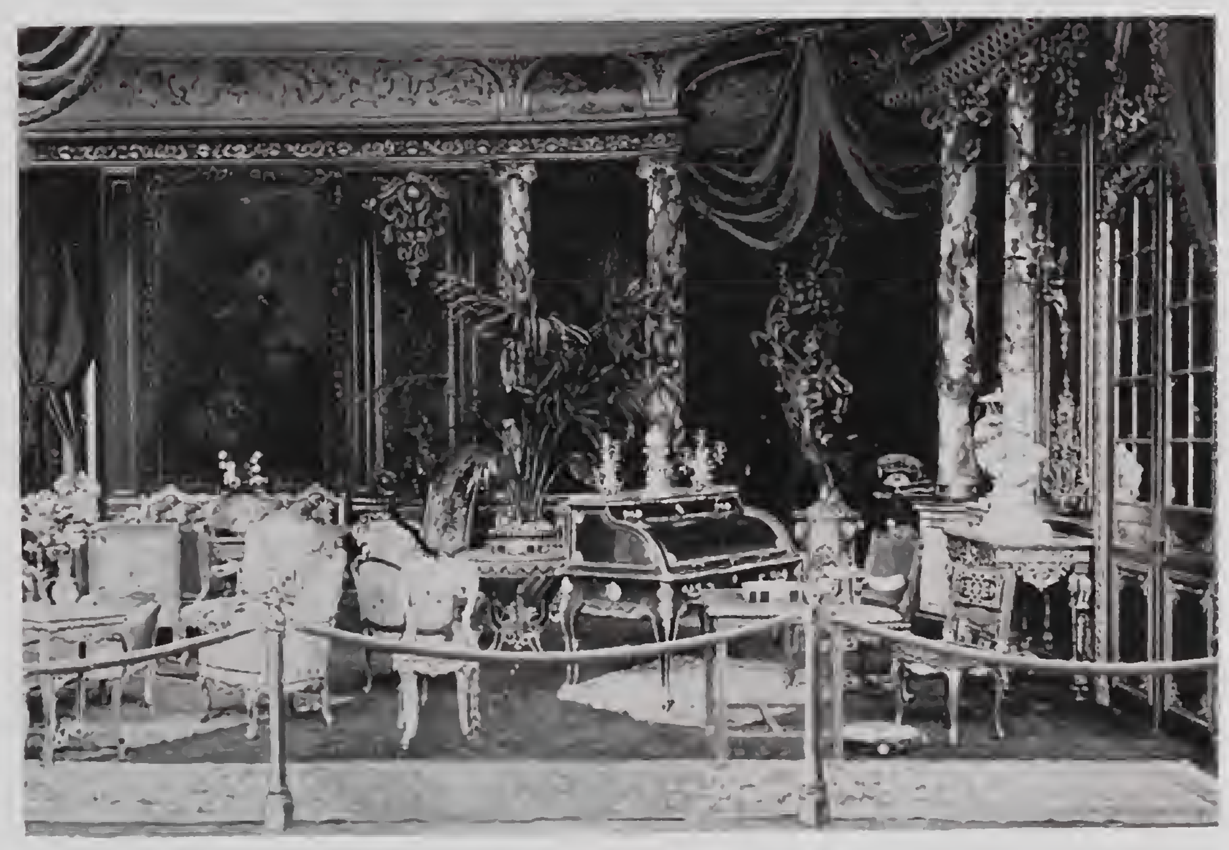
CANADIAN SECTION

ARTISTIC FURNISHINGS FROM FRANCE

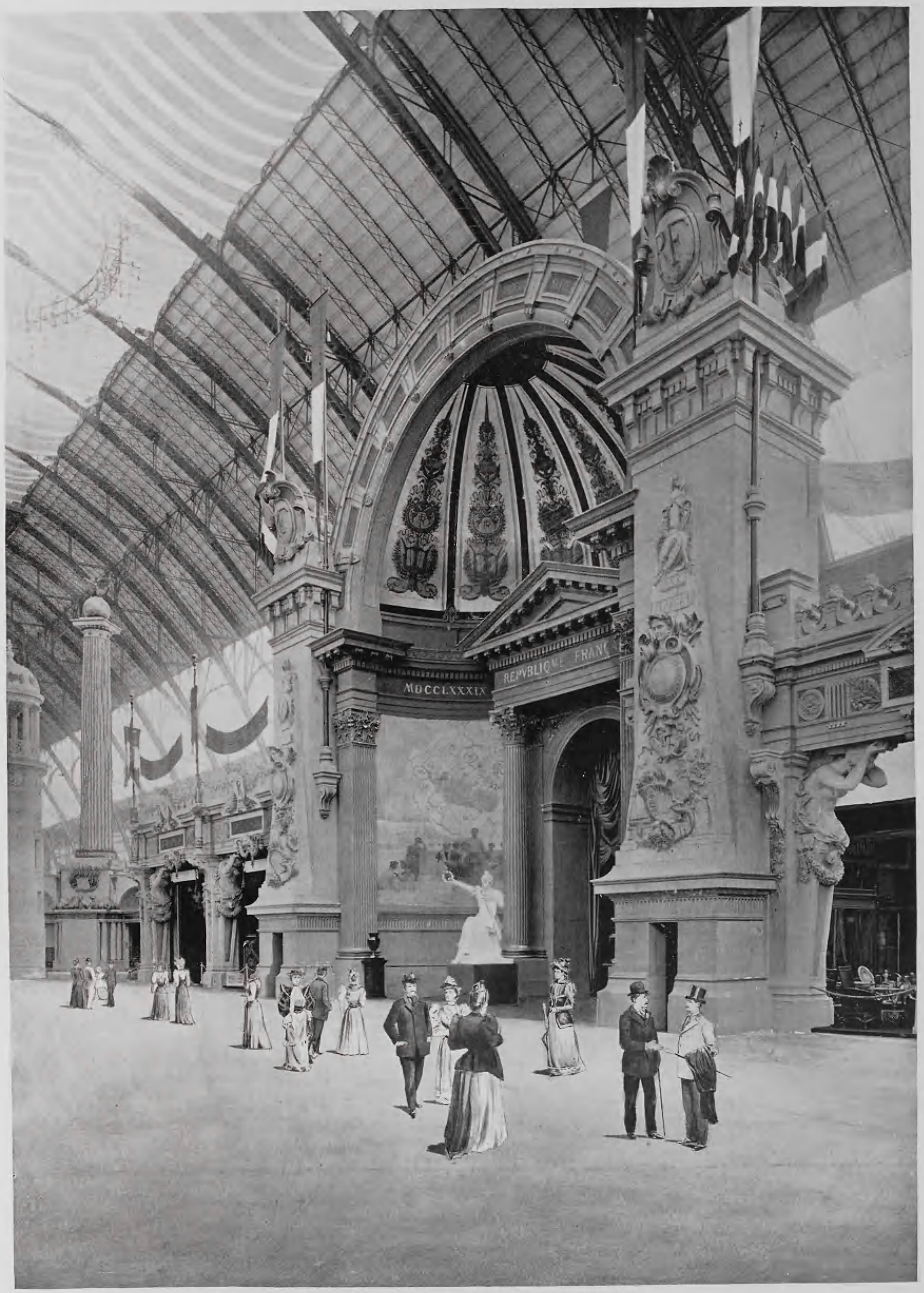
also Beauvais tapestries of surpassing beauty, and furniture upholstered with silken tapestries made at the government factories, for this is the national salon, and everything that it contains is the property of the nation. In the centre of the room is a choice collection of Sèvres pottery, some of the pieces never before exhibited. Here is an excellent illustration of what has been accomplished in this direction within the last century, and especially within the last decade, much of it due to the Sèvres factory which, subsidized as it is by the government, under government supervision, and aided by some of the foremost artificers among this nation of artists, has produced the best and most recent results in design and decorative scheme.

Among the collection of porcelains is a large Mycenæ vase by Doat, on which a tournament is depictured on a ground of vermiculated gold, and a Saigon vase by the same artist, with garlands of colored pâte, with cameos and light green ground. A Tuscan vase is ornamented with roses on white ground, and of Escallier vases there are choice specimens representing summer and autumn, and one with theatrical masks and accessories. There are Persian vases by Gely, and antique Chinese vases, the latter with figures of birds and flowers; there is a Bullant vase with decorations of warlike design, and a Pompeiian vase with shapely figures of the seasons. There are also Lille vases, with ewers and cups of various patterns, and among the pieces by Bonnuit is a coffee service with flowers in enamel edged with gold. Of Sandoz baskets, ash-stands, and ring-stands there is a large collection, and of works in what is termed biscuit of porcelain there are reproductions of some of the most famous works of the past and present centuries. Finally, in a separate case, there is a group of porcelains never before displayed in public, illustrating a new decorative method whereby the coloring is applied simultaneously with the process of manufacture.

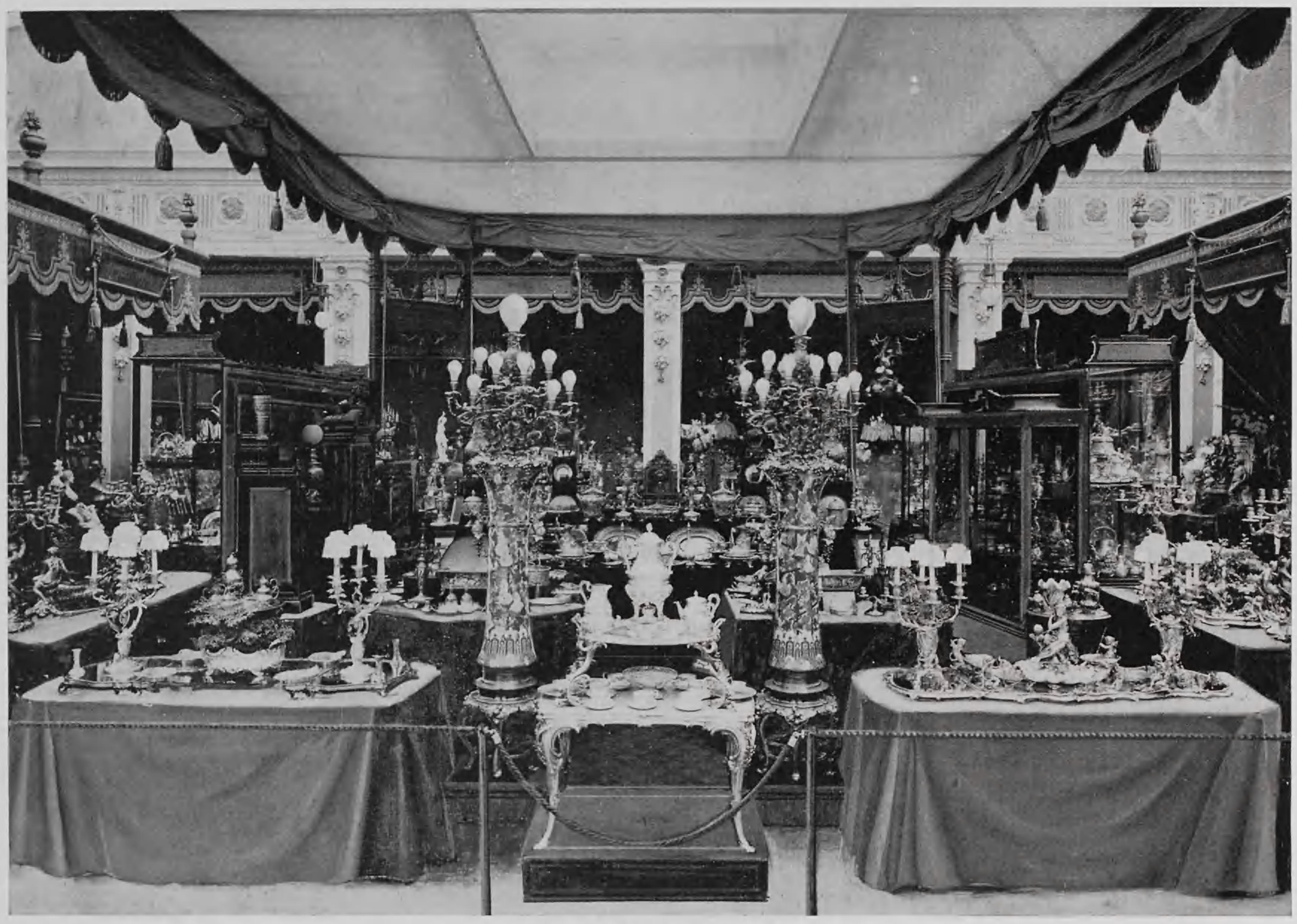
On the eastern side of the French section are collections of bronzes, silverware, jewelry, and gems, some in separate pavilions and others arranged along the outer walls. In a central position are two gilded bronze candelabra, with life-size figures supporting branches for incandescent lights, interlaced with a net-work of gold filigree. A reproduction in bronze of The Defense of the Flag represent a company of soldiers surrounding



FURNITURE



MAIN ENTRANCE FRENCH SECTION, MANUFACTURES BUILDING



SILVER BRONZES AND GILT WARE

a battery, their features and attitudes reproduced with life-like fidelity, and forming a portion of the group is a bronze replica of one of the bas-reliefs of the Arc de Triomphe reduced to one-third of the actual size. A striking figure is that of Charles V of Spain, taken from the original at Madrid. In one of the corners is reproduced a Vatican bronze of Augustus Cæsar, and in another is La Zingara, with conventional tambourine and pirouette. Of Napoleon the great there are several figures and busts, but for Napoleon the little no place was found among this assemblage of the mighty dead. In Napoleon's Last Days the victor of Austerlitz is represented in sitting posture, a robe falling from his shoulders, on his knee a map of Europe, his hand resting on the country which owed to him her glory, and in his features an expression of unutterable despair. Near by are marble busts of the emperor, bronzes of Shakespere and Milton, of Mars and Minerva, of the four seasons, and of countless other subjects and personages, real and mythical. Bearing the name of Gustave Doré and the date of 1877-8 is the last or one of the last productions of the great master, representing Bacchus, Cupids, and all the hosts of Pan sporting amid the shadows of leafy vines. There are also cabinets with decorations of chased bronze, chandeliers, candelabra, statuary, hall figures, vases, clocks, and articles of bric-a-brac, the property of royal households.

As to silverware, it is claimed by the French that only by their artificers is reproduced by the

CERAMICS AND STATUARY

BRONZE

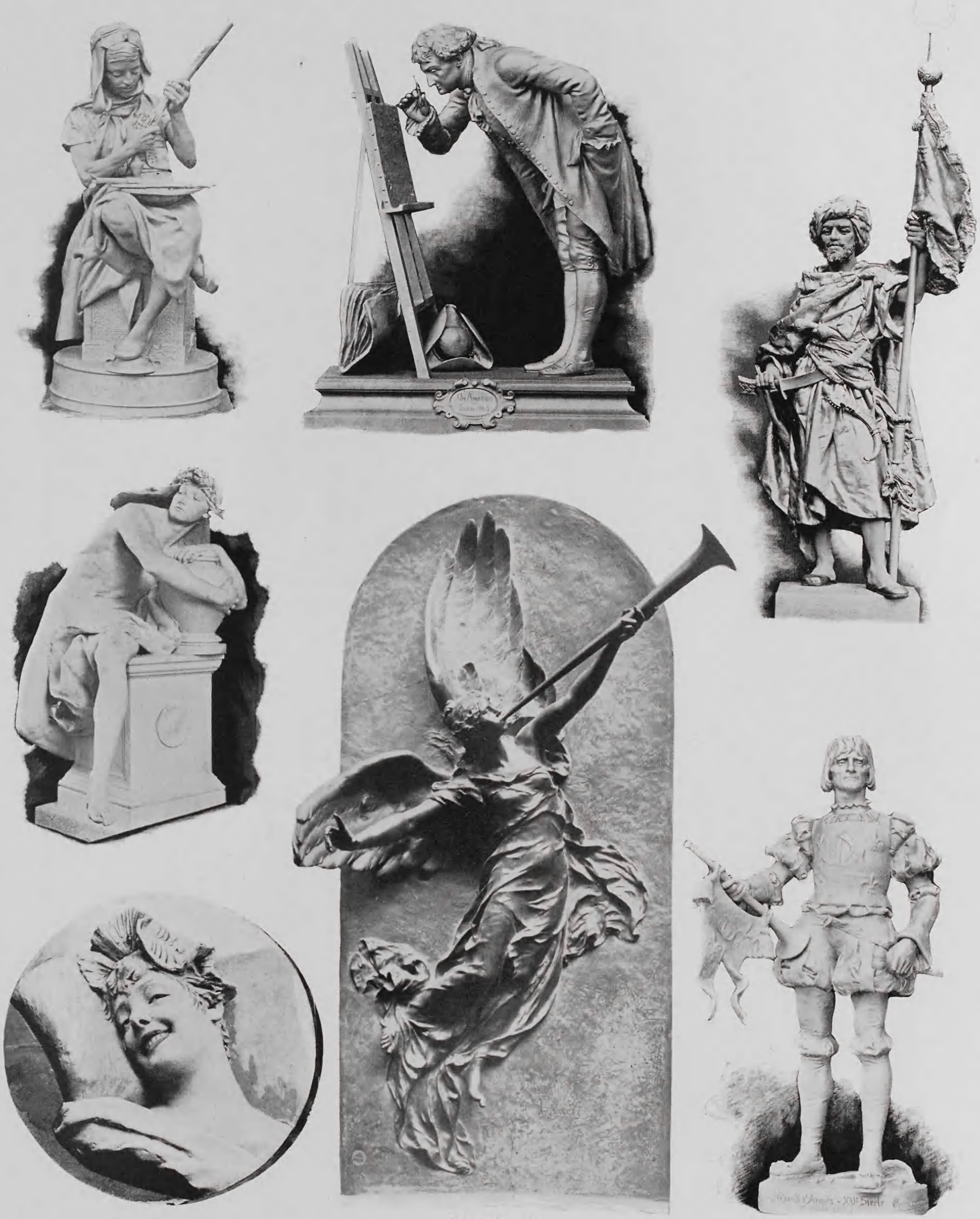
hand of man the handiwork of nature, through working from the inside of the piece and pressing on the outer side the figures fashioned by manual elaboration from approved designs. In a toilet set, for instance, containing twenty pieces and valued at $6,000, the smallest of these pieces was hammered into shape, and each one represents some natural object. Near to it is a coffee set of only three pieces worth, to the maker at least, $2,300, while of a third in plain silver, and with dull finish, the price is $2,600. In a banquet set of thirteen pieces the jardinière is of solid silver, and in a stand for grapes the trays are modelled in imitation of lotus leaves. In two corner cabinets of oak, fashioned as receptacles for silverware, the enamelling of gold, silver, and cobalt was done by hand, and represents the work of an entire year. An ebony jewel cabinet of the renaissance pattern, also with gold and silver enamelling, supports a marble globe, around which curls a golden vine in tracery as delicate as frost work. The interior is finished in ivory, and on one of the drawers is an intricate design resembling a tablet, but which, on touching a secret spring, reveals a steel-lined safe. Twenty-five thousand dollars is the price of this cunning piece of workmanship, together with a pair of lamp-stands in repoussé work, finished in gold and gilt. The manufacture of jewelry is well represented, and in this, as in silverware, some of the foremost of Parisian firms have furnished an elaborate display.

PERFUMERY

In ceramics there are excellent exhibits, including one intended to illustrate the reproduction of ancient forms, materials, and colors. In brick and tile work is an imitation of the famous pottery frieze of Persepolis, its columns and figures reduced to about one-fifth of their actual size, and yet large enough for a building of ordinary dimensions. Of vases, including one of the Alhambra pattern, there are many which even an expert cannot readily detect as copies. In china-ware France is seen at her best, as also in her display of mosaics, next to the collection of bronzes.

FRENCH CERAMICS

In the line of furniture and upholstery there are exhibited some of the most elaborate articles of Parisian make, including Gobelin tapestries and the richest of drawing-room and other decorations, with sets and pieces of all descriptions, some of the smaller articles ranging in value from $1,000 to $5,000. But in this section the most attractive feature is a reproduction of the antique furniture contained in the royal chateaux of the Bourbons.



FRENCH BRONZES

1 AN ARAB WARRIOR
5 A MUSSULMAN CHIEF

2 AN AMATEUR

3 GUARDING THE SECRET OF THE TOMB
6 LAUGHING GIRL

4 ANGEL OF THE RESURRECTION
7 HERALD AT ARMS

REBECCA

CUPIDON RAVISSEUR

PERFUMERY

In a corner of the pavilion opposite the clock tower is the display of laces and embroideries, as to the merits of which it need only be said that they are French. To produce a single exhibit in the form of a double pair of lace curtains, valued at $6,000, was the task of several hundred women, and of another pair of chrysanthemum design the price is $1,500. For the decorative work of a parlor, fashioned in gold thread, and resembling that of a chamber in the castle of Rambouillet, is also demanded the sum of $6,000. Still another feature is the clothing department, where, attired in the latest Parisian costumes, are figures in wax representing a bridal scene, with the bride surrounded by her bridesmaids and receiving the finishing touches of her toilet. The clergyman is also there, the ushers and the audience, the best man and the groom, awaiting his fiancée, who is about to set forth for church. In three compartments on the eastern gallery floor, above the French pavilion, with which they are connected by stair-ways, are the exhibits of silks and woolens, representing industries whose volume of production is little short of $200,000,000 a year. All these apartments are fashioned in imitation of royal salons, their walls hung with tapestries, their finish in cream color and gold, and the friezes decorated with floral garlands. In the display of silks are samples from more than forty factories, most of them from the looms of Lyons, and including fabrics varying in price from a few cents to $100 a yard. In one of the chambers is a collection of crapes and grenadines, gauzes, nets, and other delicate fabrics, largely the productions of Lyons, with her 150,000 weavers. Ecclesiastical vestments and decorations are the specialties of one of the exhibiting firms, its cases containing also prayer-books whose text is woven in silk. By the Union of reelers and throwsters, so-called, manufacturing processes are illustrated, and among their display is a gilded mulberry tree,

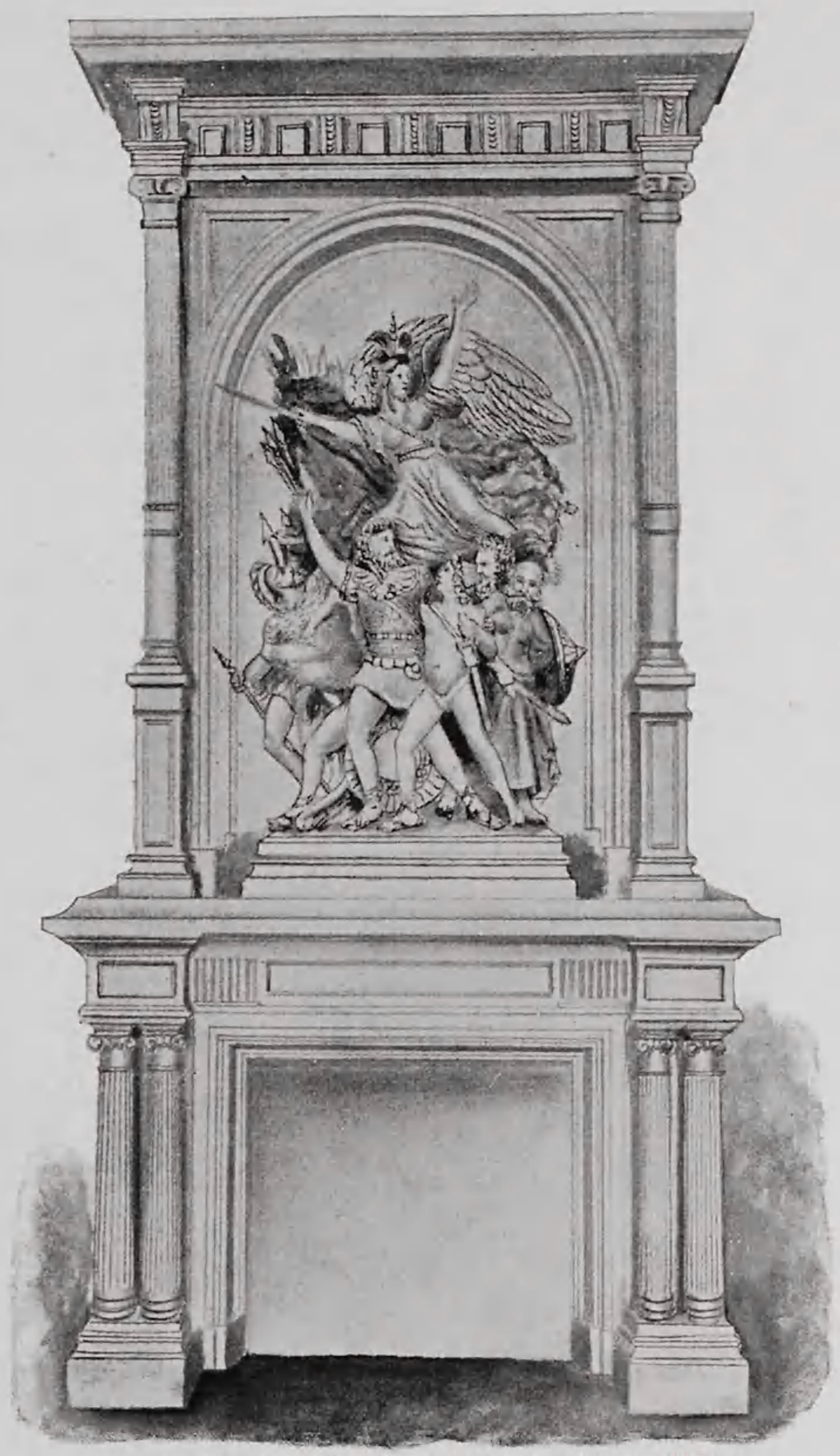
PUCK

LA DANSE, PAR DORÉ

with cocoons hanging from its branches. Of plushes and velvets a Lyons firm has a rich assortment, and the ribbons of St Etienne are so arranged as to resemble silken garments rather than accessories of the costume.

Notable among the woolen groups is that of an industrial society of Rheims, including a complete display of domestic and foreign yarns, together with finished fabrics. In another collection are raw wools gathered from many lands and of many grades, from the finest to the coarsest, with dyed wools and yarns in a separate case, these forming the exhibits of a corporation known as the Anonymous society of wool-combers. Here is represented one of the great industrial organizations of the republic, with three establishments, a capital of $2,400,000, 2,500 employés, and using among other raw material 350,000 fleeces of wool a week.

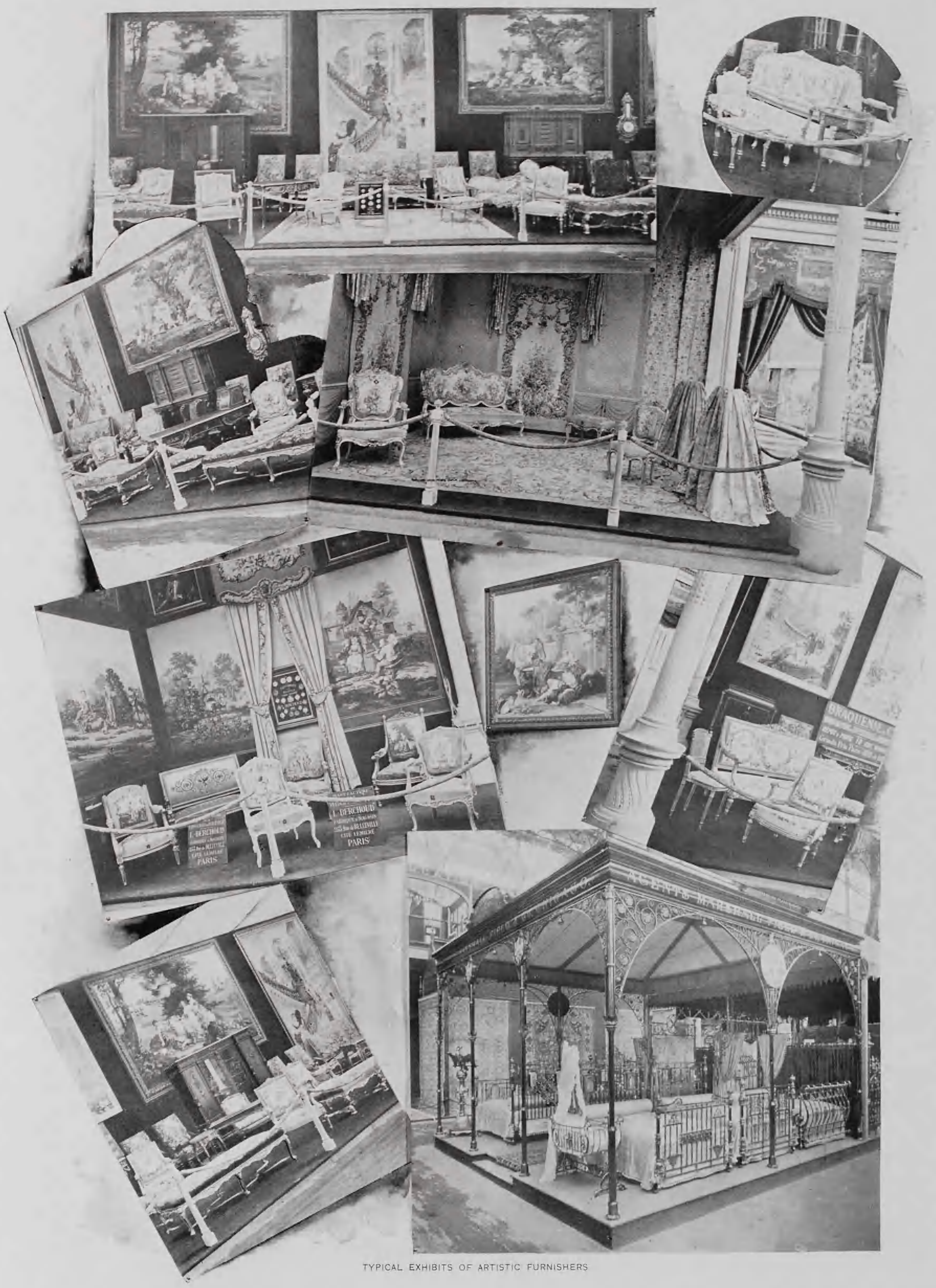
LES COUREURS


CHANT DU DEPART. FROM THE ARCH OF TRIUMPH

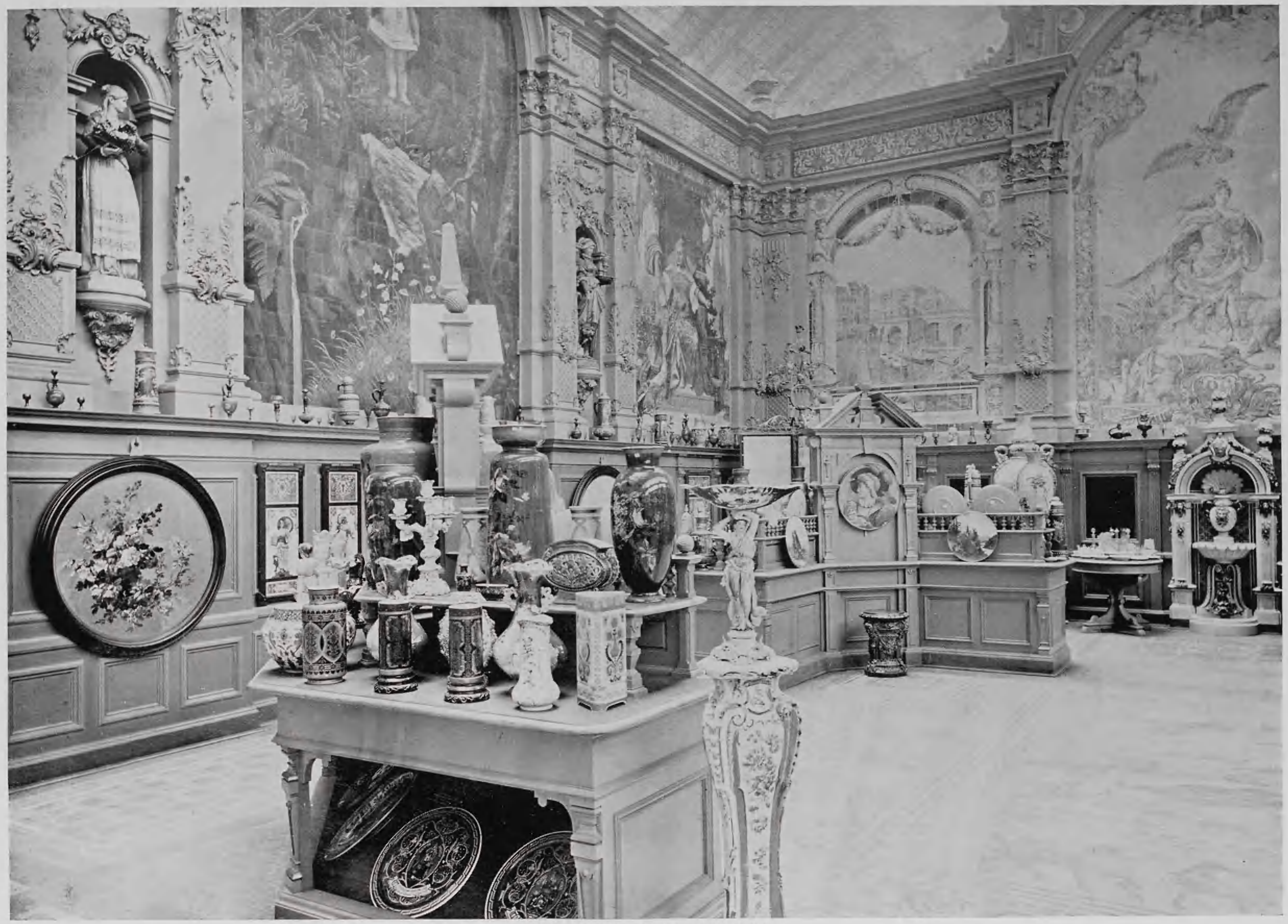
ORIENTAL DESIGN FOR RUG

Of cotton goods there are a few exhibits, and for children there is a chamber set apart, filled with dolls, dummies, and other figures fashioned in wax, wood, and metal.

With its wealth of decoration in rich and costly tapestries, in paintings in oil and water colors, in statuary of bronze and marble, together with all the beautiful things that France has prepared for display, it is no wonder that the French section is one of the most attractive points in the hall of Manufactures and Liberal Arts. A token of the nation's interest in the Exposition is the group of statuary cast in bronze and placed by order of its government in the centre of the pavilion. In La France Republicaine, as the group is termed, a colossal personification of the republic is represented in sitting posture, her body girt with a cuirass, her right arm held



TYPICAL EXHIBITS OF ARTISTIC FURNISHERS.



GERMAN PORCELAIN AND CERAMIC DECORATIONS

CORNER GERMAN SECTION

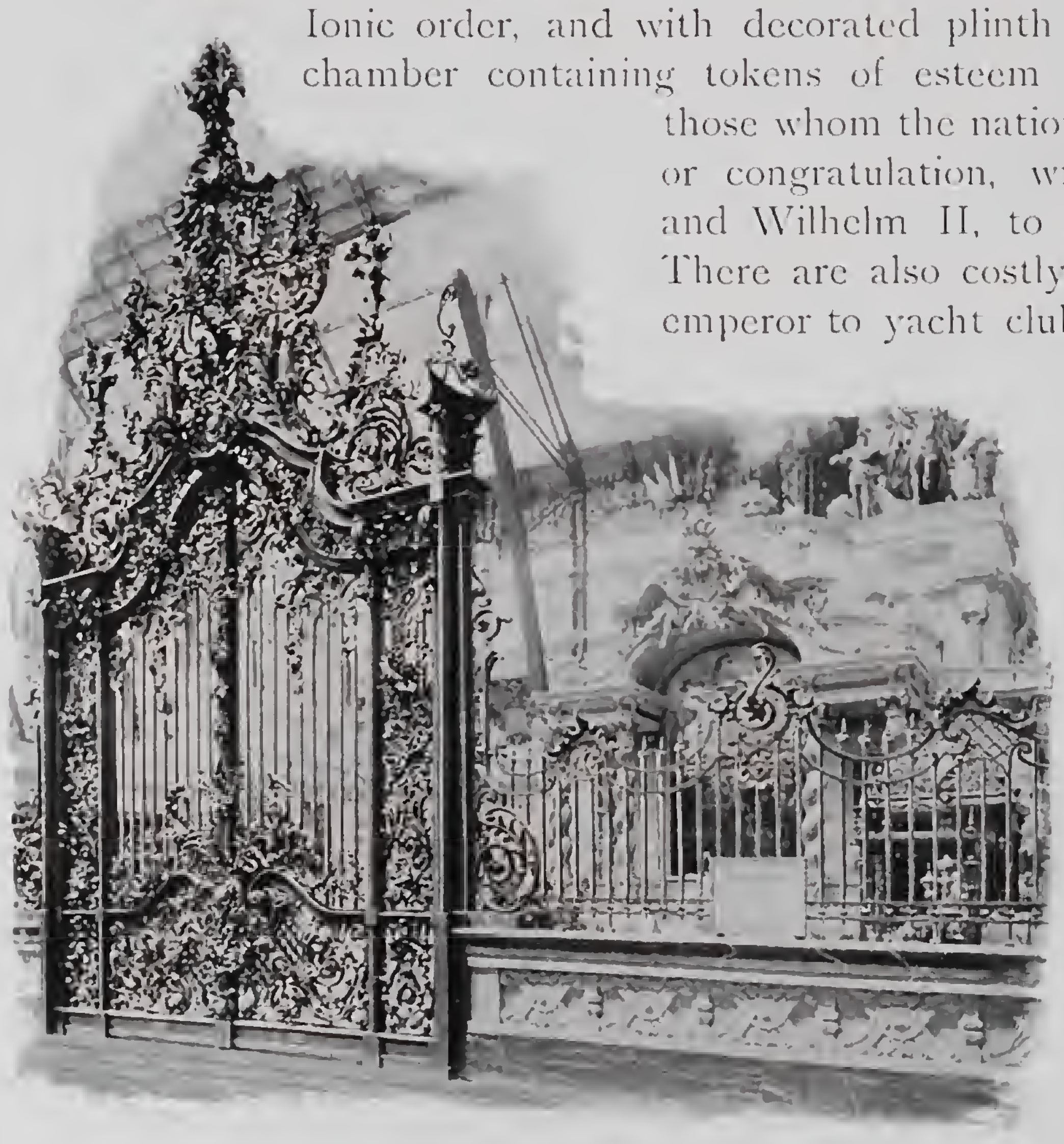
aloft, and in her left a drawn sword guarding a tablet on which are inscribed the rights of man. On the head is a diadem fashioned in figures symbolic of liberty, equality, and fraternity, and on the pedestal are reproduced in carvings the leading incidents of the revolution.

To Germany was given as a place of honor one of the four sections surrounding the central court of the Manufactures building, the remaining three being allotted to Great Britain, France, and the United States. In this, as in other departments, Germany is seen at her best, and of the total of all her exhibits, six times as large and ten times more costly than those at the Centennial Exposition, representing every commercial and artistic product of her empire, a large proportion is contained in her pavilion fronting on Columbia avenue, built after the style of the German renaissance and with rich and tasteful decorative scheme.

In a large rectangular space is reproduced the new German Reichstag, on the corners of which are towers surmounted by a dome, its apex in the form of the imperial crown, finished in burnished copper and overlaid with gold. In the statuary contained within are represented the foremost of German sculptors, their collections giving to it the appearance of an art repository. Among them are colossal statues of German emperors, and one in bronze representing Germania in the person of a female warrior, armor-clad and mounted on a richly caparisoned charger. In her right hand is the national flag, and in her left a shield, emblazoned with the imperial eagle. On one side is a youth with sword and laurel branch, grasping the bridle of the horse, and on the other the goddess of victory, proclaiming the glories of historic battlefields.

Passing through wrought-iron gates of elaborate design, flanked with towers supported by columns of the Ionic order, and with decorated plinth upholding golden eagles, we come to a richly furnished chamber containing tokens of esteem and gratitude, and articles of presentation bestowed on those whom the nation loves to honor. Among them are addresses of welcome or congratulation, with more substantial gifts, to Wilhelm I, Friedrich III, and Wilhelm II, to Bismarck, Von Moltke, and the grand duke of Baden. There are also costly works of art, including prizes awarded by the present emperor to yacht clubs and in other fields of sport, with cups, caskets, bronzes, clocks, and articles of virtu illustrating the progress of industry and art as applied to such purposes.

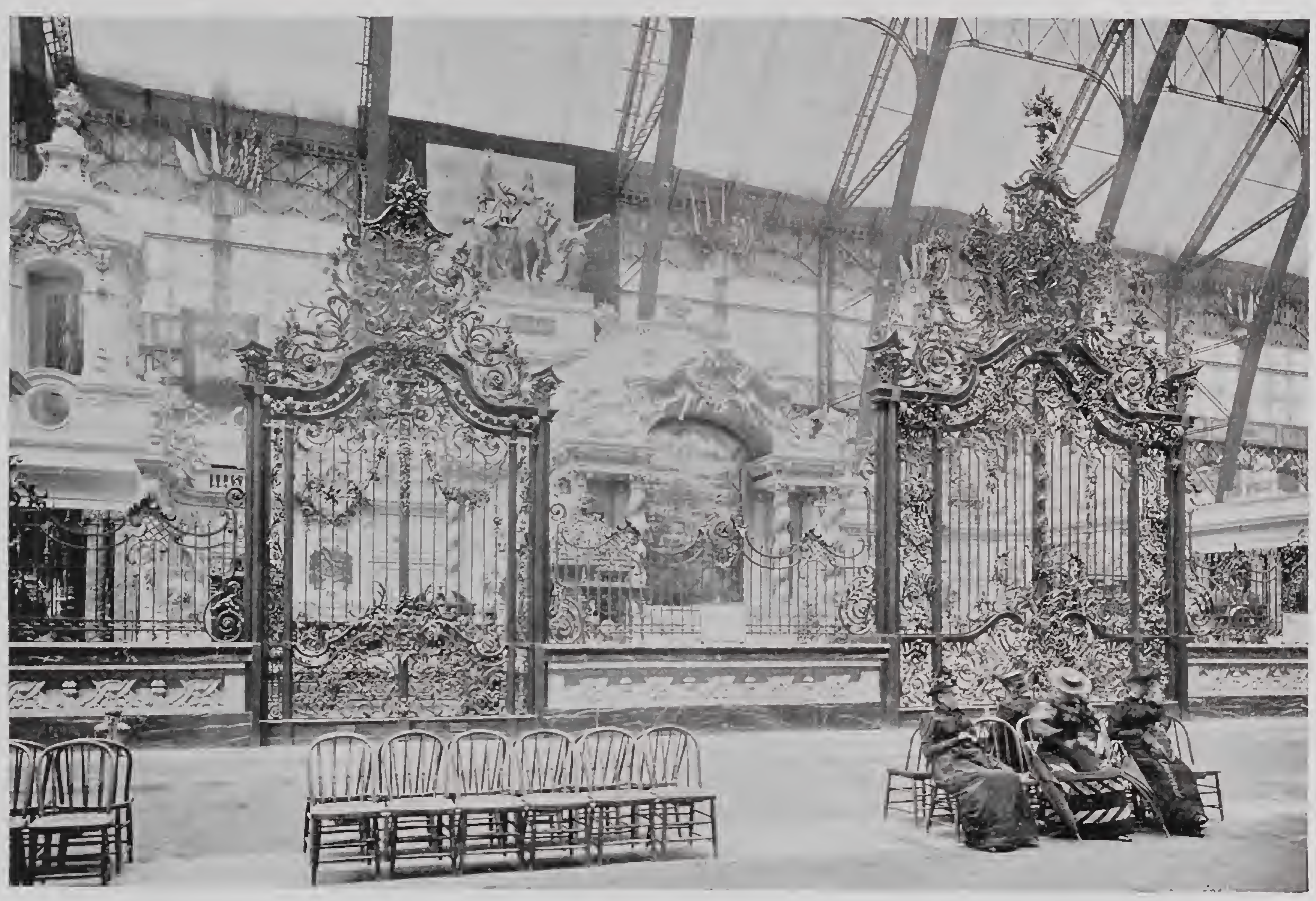
Adjacent to this section are the exhibits of gold and silver ware, jewelry and ornaments, clocks and watches, and ceramic art, the last including the display of the royal porcelain factory. Prominent among these groups is the collective exhibit of the jewelry and precious metal industries of Hanau, Pforzheim, and other German centres of these branches of manufacture. In this collection are some fifty exhibitors, and among their varied assortments it would be difficult to mention any article pertaining to the craft that is not here on exposition. To name them merely, together with those contained in the adjoining groups, would almost fill a chapter of my work. Suffice it here to say that they form a complete and most valuable illustration of a line of industry which, in



WROUGHT IRON GATES

the little Baden town of Pforzheim alone, gives work to ten thousand artizans, with an output of $10,000,000 to $12,000,000 a year.

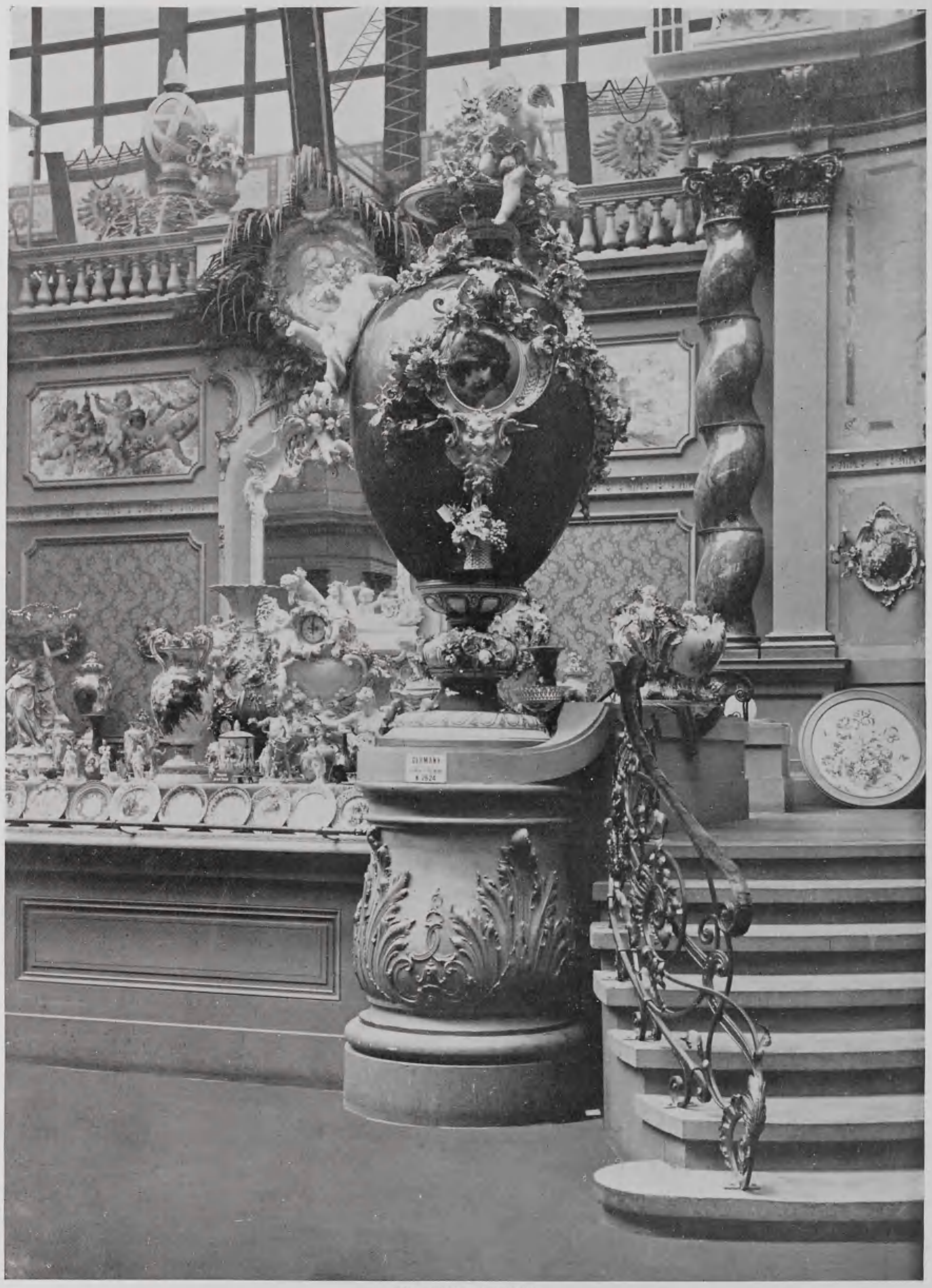
As a background to these exhibits is a portico with pillars of porcelain, and a huge allegorical painting on porcelain tiles, representing Germania surrounded by men who have won for themselves a name in the world of art. The central figure is of heroic size, and from her pedestal of fleecy clouds pronouncing a benediction upon the assembled group. In the foreground is Father Rhine, and above him the sculptor Peter Vischer and the artists, Hans Holbein, Albert Durer, and Burgmaier. Elsewhere are figures typical of commerce, industries, and art, with those of Guttenberg and of Gerhard von Rhiel, by whom were designed the lofty spires of the cathedral of Cologne, which forms the background of the picture. On either side are reproduced in a plaque of porcelain the weapons of medieval warfare bound in peaceful companionship by ribbons of silk. Curious are the twisted Saracen pillars that support the roof of the portico, to which there is access from stairways with wrought-iron balustrades. A bath-room is furnished in porcelain work of purest white, and in a dining-room the table is spread with porcelain work of choicest pattern. An alcove has for centre piece a mirror with porcelain frame of cunning workmanship, and above which is a plaque of Friedrich III, and in another alcove is a mantelpiece with sides in the shape of human figures, and above them cupids upholding a medallion. On the tile paintings which partially inclose these alcoves Cupid appears in the rôle of a professor, teaching the birds of the air to sing and the beasts of the field to dance. There are also life-sized fowl and feathered songsters, and overlooking the entire scene is a donkey gazing with the solemn stare that only a donkey can assume.



GERMAN SECTION

Worthy of mention is the wrought-iron fence which guards this section of the German exhibit, 160 feet long, 40 feet high and 22 in width, its gates alone with posts and top-piece weighing more than twenty tons. In the central gate, its massive iron bars are filled in with delicate tracery work, and on the top is a basket of flowers resembling, except as to color, those made of wax. The decorations suggest rather the work of a goldsmith than such as was fashioned by hammer and anvil; yet all were made by hand, forming a six months' task for several score of the most skilful artizans of Frankfort-on-the-Main.

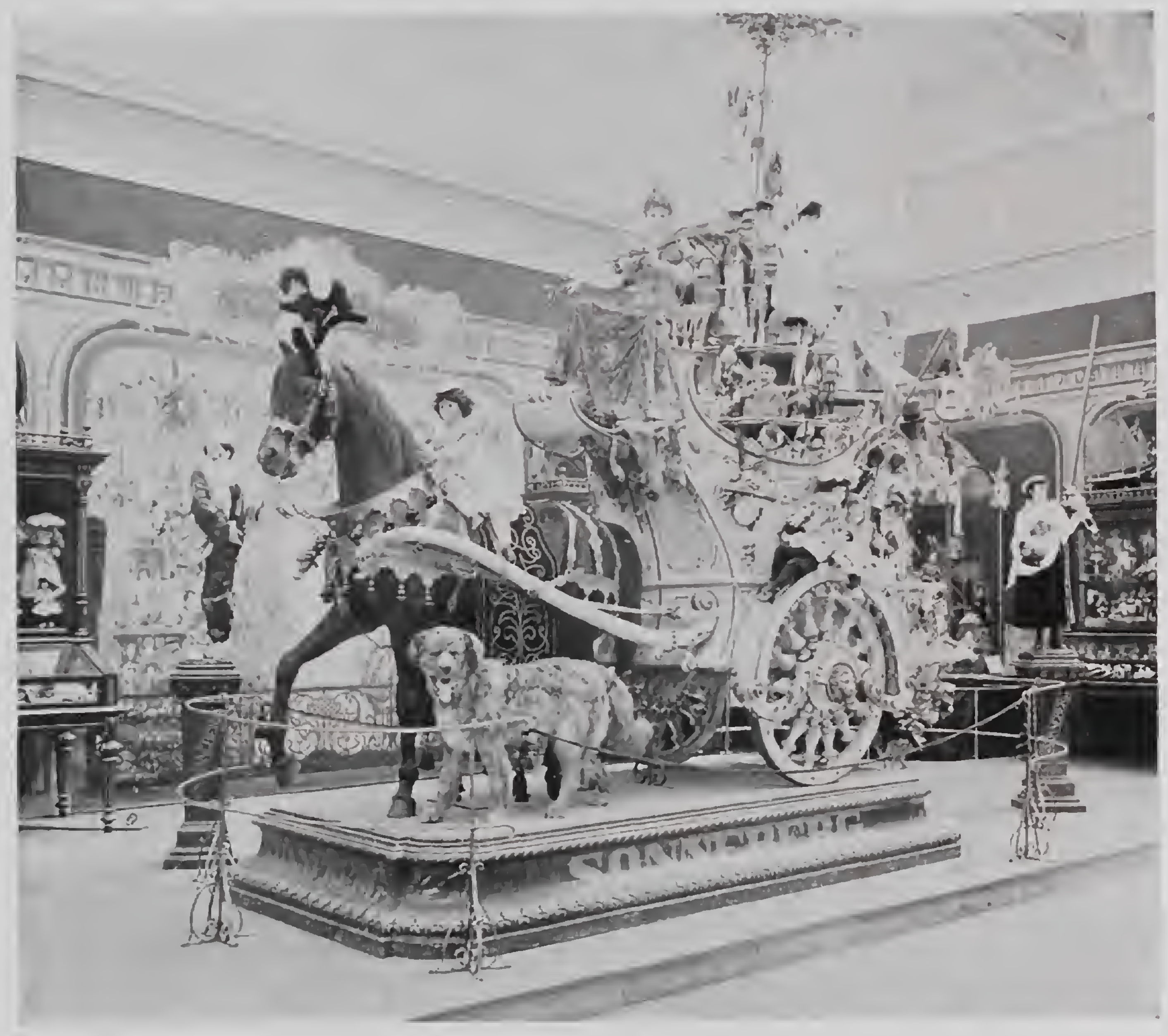
A centre of attraction is the Bavarian pavilion, fronting on Columbia avenue, and forming an integral portion of the German display. It is a temple-like structure, with arched central portico, and roof, cornice, and frieze richly adorned with statuary and bas-reliefs. In the interior are reproduced a German dining-room of the renaissance period, an imperial boudoir, and the presentation room already mentioned. In the first of these apartments the ceiling is quaintly panelled and the walls draped with dark velvet tapestry, relieved by vertical sections of richly embroidered cloth in brighter hues. Among its furniture is a colossal sideboard with glass-ware of



ROYAL PORCELAIN DISPLAY

rainbow pattern; on a centre table of antique fashion is a beer tankard three feet high, and a hand-made jewelry-box of iron, while the chairs are such as the kaisers might have used three centuries ago. The other chambers are furnished in lighter style, and especially the boudoir, the furniture of which, once the property of Ludwig II, came from a castle in the Bavarian Alps, and is so richly gilded as to resemble solid gold. The walls are hung with tapestry of blue velvet, heavy with floral designs in gold, and among the mirrors is one made up of forty smaller pieces in the rococo fashion of the sixteenth century.

In this pavilion also, as indicated by an inscription on the architecture, is a portion of the exhibits of the Bavarian art industry association, the remainder of which are contained in stalls or booths representing the various eras and phases of German life. Among them is a hunters' room of olden style, its walls adorned with antlers and stuffed birds, with shells containing the quaintest of tankards and beer-mugs, and in the centre a heavy oaken table and leather-seated chairs. Another apartment, illustrating the substantial luxury of the German renaissance period, is a dining-room, with oaken sideboards, cabinets, chairs, and tables of elaborate carving and design, with bronze busts and tall old-fashioned clocks, curtains of richly embroidered velvet, and wainscoting of gilded leather.



A CHILD'S DELIGHT

Passing these southward we come to a collection of stoves and cooking ranges, the first including specimens in decorated porcelain and earthenware, ten feet or more in height and with folding doors in the grate. Near them is a display of bronzes, and of embossed leather work, raised, colored, figured, and gilded by hand, with a tanned ox hide, from which the hair and horns have not been removed, indicating the principal material of which these articles are fashioned.

In the cutlery booths a single exhibitor has forty feet of show-cases containing every class of goods, from pocket knives to surgical instruments. In front of one of these cases is a pair of so-called ladies' scissors, six feet long and weighing the tenth part of a ton, with blades of mirror-like brightness and handles beautifully chased. There are also carving and other knives and forks of Brobdingnagian dimensions, contrasting somewhat strangely with articles intended for actual use. Adjacent to these are the collective exhibits of the German Engravers' Union, prominent among which is that of Prince Stollberg's works in the Hartz mountains, including breast-plates, helmets, shields, battle-axes, swords, and spears, such as were worn or wielded in by-gone centuries by German men-at-arms.

Among the minor exhibits is one representing a steamer at sea, wrought entirely of needles so skilfully arranged as to resemble the sheen of ocean. By a Munich toy factory is displayed a huge Santa Claus wagon, with children grouped among its contents, and above all a figure of Santa Claus. Seated in front is a young girl driving a stuffed horse, and at the side is a St Bernard dog. In a glass kiosk adjacent is a collection of toys representing in miniature all articles of daily use. A banqueting board, for instance, two feet long, is furnished forth for a score of guests, with the usual table ware, and with candelabra, wine glasses, and bottles of wine. Dolls there are in endless array, a toy kitchen and a toy stable with horses and hostler, and other exhibits from Thuringia factories. From the industrial museum at Nuremburg is a collection of scientific toys, including battle-ships three feet long, manned, armed, and equipped, with tiny ocean-going steamers, steam-engines, and electrical machinery. By Nuremburg firms is also displayed an assortment of drawing materials, mirrors, and other wares among their toy exhibits, inclosed in a large panoramic painting of that ancient burgh.

In Germany the origin of ceramic arts is almost as ancient as her empire, and in her samples at the Fair are all descriptions of workmanship, from the crudest efforts of by-gone ages to the most finished products of the present day. There are few German industries of more importance than those represented by her glassware and potteries, and none perhaps to which she points with a more becoming pride.

Among the exhibits of metallic wares is one of hammered copper goods, including crucifixes, chandeliers, and vases, some of them fashioned by hand out of a single piece of copper. By the manufacturers of the iron gates, already noted, is displayed a large collection of specimens hammered out of iron by hand work and